

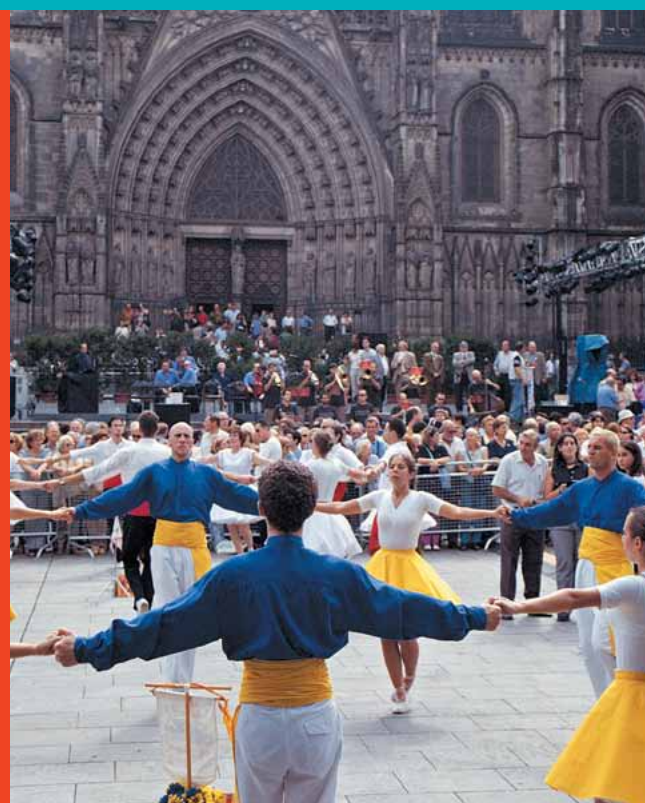
SOE2017



**EUROPEAN SOCIETY OF OPHTHALMOLOGY
10-13 JUNE 2017 | BARCELONA, SPAIN**



ABSTRACT E-BOOK





SOE 2019

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**European Society
of Ophthalmology**

Congress of the European Society of Ophthalmology (SOE) 2017

10-13 June, 2017, Barcelona, Spain

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Congress of the European Society of Ophthalmology (SOE) 2017

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FREE PAPER PRESENTATIONS
FP01: Education, Glaucoma, Retina

FP-GLA-001

Surgical management of chronic glaucoma in nanophthalmos

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Purpose: Surgical management of chronic glaucoma in nanophthalmos is a difficult technique to approach. There are some potential complications that can be observed intra-and postoperatively. We aim to minimize the surgical risk in order to get the maximum benefit by reducing the high pressure as much as possible.

Method: We report the first surgical step using the gonioscopic to see certain characteristics.

Results: We propose a technique of crystalline lens extraction and implantation of an intraocular lens (IOL) monofocal monobloc through a small incision, associated with 23 G vitrectomy in order to create space and facilitate the surgical approach in case of possible complications. Being a small incision microsurgery, we want to minimize the risk of perioperative decompression.

Conclusion: We believe that the technique with microincision crystalline lens extraction and IOL implantation monobloc surgery should be the first step in nanophthalmos as long as the angular conditions permit.

FP-RET-002

Swept Source OCT angiography of full-thickness macular holes - artifacts may appear in segmentation

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Purpose: The aim of this study was to evaluate macular microcirculation with Swept Source OCT Angiography (SS-OCTA) in eyes with full-thickness macular holes before and after surgery and in fellow eyes.

Method: A retrospective, observational study. SS-OCTA was performed either before or after surgery of full-thickness macular hole. Vitrectomy with the "Temporal Inverted ILM flap" technique was used. We measured the diameter and areas of the fovea avascular zone and the deteriorated circulation zone in superficial and deep retina vasculature before and after surgery.

Results: We examined 88 patients. Additionally, we examined 16 unaffected fellow eyes from the above-mentioned cohort. In cases of full-thickness macular holes if the hole size was small, the OCT angiography retina segmentation was correct. In cases of large, stage four macular holes with elevated margins, in the center we observed a hyperreflective circle in all layers, which corresponds to segmentation failure resulting from the segmentation line being automatically localized below the retinal pigment epithelium. Additionally, in cases with cystic spaces around the fovea, the detection of blood flow was only partially possible, showing artifactous defects. A statistically significant correlation between the size of the zone of deteriorated vessels in deep retinal layers and postoperative central retinal thickness was observed ($P < 0.05$).

Conclusion: In this paper, we present different artifacts occurring during the visualization of full-thickness macular holes with Swept Source OCT Angiography. Additionally, we confirm with SS-OCTA that blood flow in deep

retinal layers might be altered in full-thickness macular holes. In eyes with a larger area of deteriorated vessels in their deep retinal layers, lower postoperative central retinal thickness was observed.

FP-RET-003

Optical coherence tomographic angiography features in neovascularization secondary to angiod streaks

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Purpose: To characterize the features of choroidal neovascularization (CNV) secondary to angiod streaks (AS) in optical coherence tomography angiography (OCT-A) and to assess its sensitivity in CNV detection in this particular context.

Method: All consecutive patients, both with treatment-naïve and recurrent CNV associated with angiod streaks were prospectively analyzed between September 2014 and September 2015 at the Créteil University Eye Clinic and the Ecole Militaire Retinal Center. All patients underwent imaging by fluorescein angiography (FA), indocyanine green angiography (ICGA), spectral-domain (SD)-OCT, and OCT-A (AngioVue, Optovue, Optovue Inc., Fremont, California, USA). OCT-A detection rate of CNV associated to AS was evaluated. OCTA qualitative and quantitative analysis of CNV was performed. We have classified CNVs associated to AS in two patterns. A correlation with the previous treatment and exudative status in conventional imaging was equally performed.

Results: 32 eyes of 18 consecutive patients with neovascularization secondary to angiod streaks were prospectively included. Median age was 60 years-old (range 40-71).

In FA, ICG and SD-OCT, CNV were classified as active lesions in 13/32 eyes at the time of imaging and 12/32 eyes were not injected in the last 6 months. OCT-A showed the presence of CNV in 28/32 (87.5%) eyes.

Finally, 9 CNV lesions were classified as "tangled", 7 as "pruned vascular tree", and 12 CNV showed combined forms. Exudative signs and the presence of injections in the last 6 months were statistically associated with patterns ($p=0,014$ and $p<0,001$).

Conclusion: Given its high detection rate (87.5%) and its potential help in determining a prognosis, OCT-A could be thus integrated in the multimodal imaging of a patient with CNV secondary to AS.

FP-RET-004

Comparative performance analysis of new double-cutting ultrahigh speed vitrectomy systems

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Purpose: To evaluate comparative aspiration flow performance using new 23-, 25-, and 27-gauge (G) double-cutting open port vitrectome designs (TDC probes EVA, DORC International; Continuous Flow Twinac, OS4, Oertli Instruments) versus standard vitreous cutter systems (ULTRAVIT probes, Alcon Laboratories).

Method: In vitro evaluations were undertaken to assess volumetric aspiration flow rates of basic salt solution (BSS) and egg white.

Results: For all analyzed gauge sizes the highest flow rates were obtained with double-cutting probes. In standard single-blade probes the aspiration flow gradually declined with increasing cut rates despite maximum vacuum presets. In the 23-, 25-, and 27-G double-cutting probes this significant reduction of aspiration flow efficiency could not be observed and the BSS and egg white flow rates remained relatively stable despite increasing cut rates. Analyzing the aspiration flow with increasing cut rates, the efficiency of double-cutting probes was between 1.5 and 2.3 times greater compared to referential 23-G single-blade probes, between 1.8 and 2.7 times in 25-G, and between 1.3 and 2.0 times in 27-G.

Conclusion: The analysis demonstrates a stable and more efficient aspiration flow of new double-cutting ultrahigh speed vitrectomy systems. Reported findings suggest that next generation vitrectomy probe designs provide greater performance than conventional vitreous cutter instrumentation during small-gauge vitrectomy. The new vitrectomy probe designs might substantially improve the efficiency in 25-G and 27-G surgical procedures.

FP-RET-006

Surgical outcome of a new technique of ILM peeling in large macular holes

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Purpose: Large macular holes have increased risk of surgical failure with conventional macular hole surgery. Inverted ILM flap technique has been described for large holes with good outcome. However, the technique involves risk of RPE damage and has a learning curve. We describe a new technique of ILM peeling, where a rim of ILM is left around the hole but is not inverted over the hole.

Method: In this prospective, interventional case series, 10 eyes with macular holes larger than 400 μm were included. All patients underwent 23 gauge pars plana vitrectomy with posterior vitreous detachment and ILM peeling with C3F8 gas injection and post-operative prone positioning. During ILM peeling, instead of completely removing the ILM, a circular remnant attached to the margins of the macular hole was left in place. However, it was not inverted over the macular hole. Fluid-air exchange was then performed. The patients were followed up with respect to visual acuity (BCVA) and SDOCT pictures for 3 months.

Results: The mean age of patients was 62.6 ± 9.9 years. 60% patients were males while 40% were females. Mean duration of history of decreased vision was 6.8 ± 4.4 months (Range 3-15 months). Mean baseline BCVA was 0.084 ± 0.04 that improved to 0.28 ± 0.19 at 3 month ($p=0.002$). The mean minimum linear diameter (MLD) was $623.9 \pm 139 \mu\text{m}$ (Range 418-855 μm). The mean macular hole index (MHI) was 0.39 (Range 0.25-0.55). Macular hole closure was observed in 90% of patients in (9 of 10 eyes) at 3 months. Out of these 9 eyes, flat-hole roof with bare retinal pigment epithelium (flat-open) was observed in 2 eyes (20%) of patients. None of the eyes showed a decrease in vision.

Conclusion: This technique of leaving a rim of ILM at the edges of macular hole is effective, prevents inadvertent damage to the parafoveal neurosensory retina and subfoveal RPE, and preserves xanthophyll pigment as well. However, larger studies with more number of subjects and with a control group are required to evaluate its efficacy.

FP-RET-007

Outcomes of vitrectomy for primary noncomplex rhegmatogenous retinal detachment

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Purpose: To review the clinical features, functional and anatomical outcomes of primary noncomplex rhegmatogenous retinal detachment (RRD) managed by pars plana vitrectomy (PPV).

Method: A retrospective noncomparative analysis of consecutive patients with RRD managed by 23 gauge PPV from January 2014 to December 2015. Chart data analysis revealed 81 eyes/80 patients with primary noncomplex RRD. All patients underwent vitrectomy with complete fluid air exchange, laser retinopexy and gas or silicone oil (SO) tamponade. Data analyzed from medical records included: age, gender, duration of symptoms, preoperative clinical examination and intraoperative data (intraocular tamponade agent: gas or SO tamponade). A minimum of 6 months follow-up was performed. Preoperative and postoperative best corrected visual acuity (BCVA) was compared. Retinal reattachment rate was revealed.

Results: There were 55 male and 26 female patients (sex ratio: 2.1). Between the gender groups there was no statistically significant difference in terms of age (female: 60.3 ± 15.6 ; male: 61.3 ± 10.9 ; $p=0.739$), median duration of symptoms (female: 7 (2-356), male: 7 (1-712); $p=0.284$) and preoperative BCVA (female: 1.29 ± 1.07 ; male: 1.3 ± 1.04 ; $p=0.996$).

The preoperative lens status showed a non-statistically significant difference between the male (45.5% pseudophakic) and female (34.6% pseudophakic) group ($p = 0.356$). At the end of surgery patients received either gas ($n = 67$; female: 96.2%; male: 76.4%) or SO ($n = 13$; female: 3.8%; male: 21.8%) tamponade ($p=0.038$).

Mean preoperative BCVA was 1.29 ± 1.04 logarithm of the minimum angle of resolution (logMAR) and mean postoperative BCVA six months after surgery was 0.6 ± 0.6 logMAR ($p=0.0001$, paired t-test).

The single surgery anatomical success rate during the 6 months follow-up period was 96.3%.

Conclusion: High anatomical success rate of primary vitrectomy for RRD was achieved with single surgery. Visual function significantly improved after six months follow-up.

FP-RET-008

Characteristics of rhegmatogenous retinal detachment with choroidal detachment

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Purpose: To evaluate baseline characteristics and final visual outcomes of patients diagnosed rhegmatogenous retinal detachment (RRD) with choroidal detachment (CD) in order to identify the risk factors that may associate with this condition and also whether the outcome is significantly differed from those without choroidal detachment.

Method: retrospective cohort study was conducted to evaluate the baseline characteristics that may contribute to choroidal detachment and outcomes between the case and control group. Data were collected from a single center from July 2008 to Jun 2015.

Results: 375 cases of RRD were identified within the period. 18 cases had choroidal detachment (4.8%). Logistic regression analysis found that the presenting intraocular pressure, area of retinal detachment, presence of giant tear, presence of anterior chamber cells and preoperative proliferative vitreoretini-

nopathy associated with significantly higher chance of choroidal detachment. Patients with preoperative choroidal detachment also had significantly poorer final visual acuity.

Conclusion: Incidence of CD was 4.8% of all RRD patients in our study. Patients will lower presenting intraocular pressure, larger area of retinal detachment, presence of giant retinal tear, presence of anterior chamber cells and preoperative proliferative vitreoretinopathy associated with significantly higher chance of choroidal detachment. This is an important disease entity as it associated with significantly worse final visual acuity.

FP-EDU-009

Risk of bias in randomized controlled trials reported recently in high-impact ophthalmology journals and general medical journals

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Purpose: This systematic review investigates the risk of bias in randomized controlled trials (RCTs) published in high-impact ophthalmology journals and general medical journals. We also aim to identify factors associated with high risk of bias.

Method: Using Ovid MEDLINE (1946-2016), RCTs in the top 10 high-impact ophthalmology journals published in the year 2015 were systematically identified and critically appraised for the risk of bias prevalence. To perform the critical appraisal, relevant extracted RCTs were assessed in all domains of bias as defined by the Cochrane Collaboration.

In addition, the prevalence of conflict of interests (COIs) and industry sponsorship of trials was investigated. A comparison to ophthalmology articles from four high-impact general medical journals was performed.

Results: Of the 151 records that were screened from ophthalmology-specific journals, 119 RCTs met all inclusion criteria and were critically appraised. In total, 29.4% of domains had an unclear risk, 13.8% had a high risk and 56.8% had a low risk of bias.

In comparison, ophthalmology articles from general medical journals had a lower prevalence of unclear risk (18.2%), higher prevalence of high risk (23.4%) and a higher proportion of low risk domains (58.4%).

A total of 89.2% of RCTs from ophthalmology-specific journals had at least one domain with an unclear risk of bias, and 56.7% of RCTs had at least one high risk domain.

Conclusion: Almost 90% of critically appraised RCTs from ophthalmology-specific journals had at least one unclear risk domain, while more than half of RCTs had at least one high risk domain.

Given the influence that bias can have on study results, it is necessary that future RCTs closely follow published guidelines to minimize the possible risk of bias.

FP-EDU-010

Factors associated with the choice of ophthalmology as a future a career in medicine

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Aim: The aim of the is study is to investigate the association between the choice of ophthalmology as a future career and factors related to the specialty and medical students, such as gender, career prestige, role models, final total score, expected place of residency, family influence, and future lifestyle.

Methods: 440 young physicians filled in a structured survey about their future career during the last 2 weeks of their internship year. Demographic characteristics like gender, marital status, place of residence, and parents' occupation were collected and analyzed.

Participants were also asked to rate other factors that are known to influence career choice among medical students like final score, medical residency hospital, and work/ family time balance Participants were asked to rate these factors, in terms of their influence on their career choice decision, on a scale from 0-3 (with 0 being no effect at all or non-applicable, 1 being the least effect, and 3 being the highest effect).

Results: Out of the 440 surveyed interns, 103 (44 males and 59 females) listed ophthalmology as one of top 3 specialties of choice. An in depth analysis of those who listed ophthalmology as a first specialty choice was conducted to better understand the factors associated with choosing ophthalmology as their future career.

Final score and prestige of ophthalmology were among the most commonly stated factors when choosing ophthalmology specialty. While international medical training, and family influence were found to be the least stated factors when making such a future career choice.

Conclusion: The results of this study will enhance the understanding of career choice among medical students, and factors matter to them the most when making their career choice. Policy makers need to understand these factors in order to address probable shortages in ophthalmologists, and other therapeutic areas, in Egypt.

FREE PAPER PRESENTATIONS
FP02: Oculoplastics, Oncology & Pathology

FP-ONC-011

Combined treatment of large epibulbar melanoma with γ -knife stereotactic radiosurgery and subsequent laser excision

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Purpose: To evaluate the results of combined treatment of large epibulbar melanoma (EM) with γ -knife stereotactic radiosurgery and subsequent laser excision

Method: Patient B., male, 38 years old was admitted with complaints of a rapidly growing pigmented tumor of the right eye. 20 years ago he noticed a spot (weakly pigmented, de novo) with a diameter of about 2 mm. The rapid increasing of the tumor occurred in the last 6 - 8 months to 13x10x8 mm in the projection of the eye's fissure. There are large vessels in the conjunctival fornix. A slight asymmetry of the lymph node in comparison with the opposite side in preauricular region was revealed. Visual acuity was 1.0. Cytological examination confirmed the diagnosis of melanoma of the conjunctiva. For the treatment of EM we used irradiation (70Gy) with Leksell Gamma Knife followed by laser excision of the tumor in 7 days.

During the irradiation special attention was paid to the immobilization of the eyeball. The laser excision of the tumor was performed in the limits of healthy tissues with advanced obliteration of vessels, laser carbonization place of the removed tumor and plastic conjunctiva. The follow-up period is 16 months.

Results: The healing of surgical wounds have been sluggish (for four months) with signs of radiation damage to the ocular surface and thinning of the sclera in the center of the removed EM. Symptoms of tumor growth were not detected. Visual acuity of the right eye is 1.0. Optical refractive media of eye is transparent with the fundus without signs of radiation damage. Symptoms of the generalization process are not revealed.

The histological conclusion is pigmented spindle cell melanoma. Preauricular lymphadenopathy was resolved.

Conclusion: The combined treatment (irradiation with γ -knife stereotactic radiosurgery followed by laser excision) is effective for large EM.

FP-ONC-012

Results of proton beam therapy for uveal melanoma at Orsay Proton beam therapy center

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Purpose / Method: The study was retrospective and one-centered on patients treated for uveal melanoma by protontherapy between January 1992 and December 2010 (total dose of 60 cobalt Grays equivalent delivered in 4 portions over 4 days).

The initial clinical characteristics of the tumour, the treatment and the medical follow-up were recorded prospectively. The rates of overall survival without metastasia or enucleation, as well as their prognostic factors were statistically analyzed.

Results: 3,404 patients were examined during this period of time. The follow up median lasts 98 months. The rates of overall survival, of survival without metastasis, of local recurrence and secondary enucleation at year 5 are respectively 64%, 74%, 3, 82% and 6, 69%. The indication of the secondary enucleation was for a neovascular glaucoma in most cases. Results ,ocular complications and visual acuity will be detailed in the presentation.

Discussion: This study confirms the low rate of local recurrence on the very long term. Currently, the secondary enucleation rate is decreasing very likely thanks to the input of endoresection of the tumour scar after the protontherapy

Conclusion: Treatment with protontherapy ensures an excellent local control of the choroidal melanoma. The improvement of the ocular conservation requires additional treatments such as transpupillary thermotherapy, endoresection, and the anti-VEGF injection.

FP-ONC-013

Uveal melanoma in Poland - single centre experience

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Purpose: There a few data on uveal melanoma survival in the literature from Eastern Europe due to the lack of sufficient follow-up data. The aim of the study was to assess the follow-up data and disease specific mortality from uveal melanoma based on single centre experience in Poznań, Poland.

Method: Charts of the patients treated due to ciliochoroidal melanoma at the Department of Ophthalmology, Poznań Poland between 1991- 2012 were reviewed retrospectively. The iris tumours were excluded from this analysis due to a different prognosis. The survival data were obtained and cross-checked with the regional and national cancer registry. For statistical analysis we used Statistica software, version 10. (StatSoft, Inc.)

Results: We identified 402 patients in the database, 23 of them were excluded due to the lack of sufficient follow-up data. Among 379 patients, 185 were women, 194 men with median age 64.5 years. The median largest basal diameter of the treated tumours was 10,85 (range: 3.94 - 21.12) mm and the median tumour thickness was 4,3 (range: 2.2 - 15.79) mm. The median follow-up was 5 years (range: 1-26).

178 patients died by the time the study was closed, 97 (36,7%) of the due to metastatic spread. The metastatic death was associated to the tumor thickness at presentation ($p=0,00003$) and not to patient's age ($p=0,690$), gender ($p=0,448$), ciliary body involvement ($p=0,400$) or to the largest basal diameter ($p=0,008$).

Kaplan-Meier estimate for metastasis free survival was 78% after 5 years, 71% after 10 years and 62% after 15 years. The actuarial disease free survival rate was 85% at 5 years, 80% at 10 years and 79% after 15 years.

Conclusion: The uveal melanoma survival in Poland tends to be in accordance with the follow-up data reported in other European countries. The most important risk factor for metastatic death was tumour size at presentation.

FP-ONC-014

Incidence and evolution of retinal detachment in retinoblastoma: identifying opportunities to reduce secondary enucleation and optimize visual potential

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Purpose: Most retinoblastoma (Rb) patients retain their eyes, so now vision retention is a primary focus of treatment (TT). Retinal detachment (RD) lowers visual potential, impedes focal therapy, and increases the risk of complications requiring enucleation.

The aim was to examine incidence of RD at presentation, during TT, and its evolution with respect to each TT modality.

Method: This retrospective monocentric study included all consecutive Rb patients receiving first line TT at Jules-Gonin Eye Hospital (January 2008-January 2016). Univariate and multivariate regression were used to identify risk factors for poor visual prognosis, secondary enucleation and secondary RD.

Results: 142 eyes (110 patients) with Rb were included, 32 bilateral cases. Mean age was 22.9 months. 59 eyes presented with primary RD, 9 signs of a spontaneous reapplication and 74 with no RD. Time to resolution of RD was significantly slower with intra-arterial chemotherapy (IAC) than with intravenous chemotherapy (IVC) (4.6 vs 2.7 months, $p=0.04$). Median final visual acuity (VA) of patients with primary RD was significantly worse than without, 1.0 logMAR vs 0.3 logMAR ($p<0.001$). RD was a complication of TT in 28 eyes, on average 5.9 months after TT started.

In eyes with secondary RD 6 were enucleated, 2 had persistent RD, 10 resolved spontaneously and 10 underwent a successful scleral buckling surgery. Multivariate analysis indicated that; eyes with tumors close to the optic nerve and/or macula had the greatest risk of poor visual outcome, eyes with tumors located near the optic nerve, with RD and treated with IVC had the greatest risk of secondary enucleation and eyes with seeding and that were treated with IAC had the greatest risk of secondary RD.

Conclusion: Rb eyes that have primary RD are at increased risk of secondary enucleation and poor visual outcome. Secondary RD occurs more often and takes longer to resolve in eyes treated with IAC but without affecting globe salvage or final VA.

FP-ONC-015

Markers characteristic for differentiation of intrabulbar tumours in colour Doppler imaging (CDI)

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Purpose: The similarity of many benign intrabulbar lesions to a malignant tumour requires detailed differential diagnostics. However, none of the known methods can be used as the only one to determine the type of lesions. The aim of this study was to determine CDI markers characteristic for choroidal melanoma and metastatic intrabulbar tumours increasing the diagnostic value and giving a new insight into usage of this method .

Methods: CDI involved patients with malignant (n=44) and benign (n=49) intrabulbar tumors were suspected. Patients with malignant tumours were divided into melanomas (n=28) and metastatic tumours (n=16). Univariable analysis with the logistic regression method and multivariable stepwise logistic regression analysis to create models testing tumour malignancy and differentiating melanoma from metastatic lesions were used. Model sensitivity and specificity were evaluated by the receiver operating characteristics curve (ROC). K-fold validation was performed. The data were analysed in Statistica 12 software, and $p<0.05$ values were considered statistically significant.

Results: Arterial blood flow, regular tumour surface and tumour location in peripheral retina were found significant for tumour malignancy ($p<0.05$). Mixed blood flow increased test accuracy ($p>0.05$). Model sensitivity and specificity were 83.7% and 75.7%. Regular tumour surface, hypoechoic or isoechoic tumour mass differentiated melanoma and metastatic masses in regression model, with sensitivity of 85.2% and specificity of 75.0%. Area under curve (AUC) for both models was 0.851 standard error (SE) 0.041 and 0.853 SE 0.063. AUC in five fold cross validation was 0.80 SE 0.0477 and 0.743 SE 0.094, respectively.

Conclusions: Arterial or mixed blood flow, regular tumour surface and tumour location in peripheral retina may be characteristic for malignant tumours. Regular tumour surface and echogenicity of tumour mass could differentiate melanoma from metastatic tumour.

FP-OPL-016

Small margin excision of periocular basal cell carcinomas - 11 years follow up

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Purpose: To analyse the outcome of small margin (up to 2mm) excision of primary clinically well-defined peri-ocular basal cell carcinomas (BCCs) at 5 years and 11 years after excision.

Method: Retrospective evaluation of 185 well-demarcated primary basal cell carcinomas having a minimum follow-up of 132 months. All patients underwent excision of the tumour with maximum margins of 2 mm. Resulting defects were, if possible, closed directly. Reconstruction of defects requiring flaps or grafts was delayed until receipt of the histological report which was obtained in all cases.

Results: Out of the 185 patients 69 patients were still alive after at least 11 years after the excision. One-stage excision and direct closure was performed in 60 patients (86.9%). In 9 patients (13.04%) excision was performed on one day and reconstruction was done four days later, after receipt of the histopathology report. Histological assessment confirmed complete excision after the first excision in 59 (85.5%) rising to 69 (100 %) after 2 excisions. The mean follow-up was 156 months.

In this group of patients there was no recurrence however 6 patients noted to have developed new tumours in the other eye or the forehead.

Conclusion: This is a unique study that has the longest follow up period. There has been no published work to evaluate the recurrence rate of BCCs after such long period. In the absence of availability of Mohs surgery, well demarcated nodular basal cell carcinomas can be safely excised using smaller margins than conventionally practised.

FP-OPC-017

Merkel cell carcinoma of the eyelids- rare, but not to be forgotten*Klett A., Rebane R.**East Tallinn Central Hospital Eye Clinic, Tallinn, Estonia*

Purpose: Merkel cell carcinoma (MCC) of the eyelids is a rare, highly malignant neuroendocrine tumor, 5-10% of all cases occur on the eyelids. The aim is to describe cases of MCC treated at East Tallinn Central Hospital Eye Clinic.

Method: A review of the literature and personal experience of the authors. The records of three patients with histologically proven MCC were analyzed retrospectively. They were seen and managed by the first author (AK) from 2002-2016. Recorded data included demographic features, type of treatment and outcome.

Results: All patients were female, the lesion was on the left side and they complained of a fast growing tumor with no pain or itching. The tumor was bleeding when manipulated and patients were also consulted by an oncologist to exclude systemic spread. A 62-year-old woman had MCC on the left upper eyelid and underwent resection with 5mm tumor free margins. The reconstruction of the defect was done with a free flap skin graft taken from the ipsilateral side lower eyelid. She has been 14 years under observation without recurrence. The second case was a 71-year-old woman with a reddish tumor on the left lower eyelid. She underwent tumor excision with lower lid transpositional flap from the temporal side. She has been tumor free for 3 years. The last case was a 82-year-old woman with a tumor on the left upper eyelid. After tumor removal reconstruction was done with a free skin transplant from the medial brachium. Due to tumor free margins 3 mm radiotherapy was added after surgical excision. The patients follow up time is 9 months without a recurrence.

Conclusion: MCC is a rare malignant disease, but the clinical features of the tumor help to make the diagnosis. Due to the rapid growth and aggressiveness of the tumor a multidisciplinary approach is needed.

FP-OPL-018

Transorbital sural nerve grafting for pediatric neurotrophic keratopathy*Katowitz W.^{1,2}, Revere K.^{1,2}, Khatib L.¹, O'Sullivan R.², Bunya V.², Massaro-Giordano M.², Nguyen P.¹**¹Children's Hospital of Philadelphia, Ophthalmology, Philadelphia, United States, ²Scheie Eye Institute of the University of Pennsylvania, Ophthalmology, Philadelphia, United States*

Purpose: Recent reports of regional nerve grafting in adults and older children have demonstrated successful restoration of corneal sensation. We sought to perform corneal neurotization in children in the amblyopic age range, using a new scleral tunnel technique, and to directly evaluate corneal reinnervation using confocal microscopic imaging.

Method: Case series of three eyes in three children with acquired unilateral corneal anesthesia. All patients underwent corneal sensory reinnervation by free sural nerve grafting. After end-to-end coaptation to the contralateral supratrochlear nerve the sural nerve was tunneled under the nasal bridge to the affected side. Individual nerve fascicles were isolated and sutured into place under partial thickness scleral flaps at the corneal limbus. Primary outcomes were central and peripheral corneal sensation as measured with a Cochet-Bonnet esthesiometer; improvement in corneal clarity; corneal nerve re-growth, quantified with confocal microscopy imaging of the cornea.

Results: Neurotrophic cornea with ulceration and scarring developed following traumatic brain injury (patient A, age 5 years) and resection of a posterior fossa tumor (patient B, age 4 months and patient C, age 5). All eyes had

non-measurable corneal sensation preoperatively. Corneal neurotization was performed on patient A at age 6 and patient B and C at age 7 years. Patient A and B had measurable corneal sensation and a slight decrease in corneal scar density at 6 months post-operatively. Patient C showed improvement in vision. Patient A had an increase in average corneal nerve density between confocal microscopy imaging sessions performed at 1 (7.6 mm/mm²) and 4 months (10.9 mm/mm², post-operatively; and no operative complications.

Conclusion: We report the three youngest patients to have undergone corneal reinnervation by nerve grafting. Confocal microscopy provided direct anatomic evidence of the ongoing process in one patient.

FP-OPL-019

Complication rate after lateral orbital decompression *ab externo**Grusha Y.^{1,2}, Ismailova D.^{1,3}**¹State Institute of Eye Diseases, Orbital & Ophthalmic Plastic and Reconstructive Surgery, Moscow, Russian Federation, ²I.M. Sechenov First Moscow State Medical University, Ophthalmology, Moscow, Russian Federation, ³First Moscow State Medical University, Ophthalmology, Moscow, Russian Federation*

Purpose: to analyze complication rate after deep lateral wall decompression (LWD).

Method: 57 patients (86 orbits) with TED were enrolled into the study: 42 female and 15 male. Mean age was 56,3±8,8 y.o. (from 32 to 76 y.o.). Deep LWD (no fat removal) via external approach was performed in all the patients. In 29 patients intervention was bilateral. Mean duration of the disease was 25,4±31,9 months (from 2 months to 11 years), mean CAS was 2,7±3,6. All the patients underwent routine ophthalmological examination (visometry, tonometry, perimetry, biomicroscopy, ophthalmoscopy), exophthalmometry, color and contrast sensitivity. Optic coherence tomography was used to assess optic nerve head and RNFL-thickness. The main outcome measures were best corrected visual acuity (BCVA), reduction of proptosis, keratopathy one month after surgery and complication rate. Patients with active disease (7 patients) were preoperatively treated with high-dose intravenous prednisone injections (pulse - therapy). All the patients had controlled thyroid function.

Results: The indications for surgery were disfiguring exophthalmos (71 orbits), optic neuropathy (5 orbits) and corneal damage (10 orbits). BCVA was stable: 0,94±0,47 preop and 0,97±0,32 postop (p>0,05). There was a mean reduction in proptosis of 2,6±1,7mm (p< 0,05). In all cases of keratopathy or corneal ulcer improvement and epithelization were achieved. The rate of complications was low, transient temporal numbness in 30 cases (34,9%), 1 case of new onset diplopia (1,2%), 1 case of wound infection with fistula formation (1,2%), 1 case of temporal hollowing (1,2%), 1 case of dural tear with CSF leak. There were no cases of permanent visual loss or decrease of visual acuity, no overcorrection, no orbital haematoma, no oscillopsia, no reduction of jaw opening. Visible scar occurred in 17 cases, although not significant in most cases.

Conclusion: deep LWD *ab externo* is an effective and safe option for treatment of patients with TED.

FP-OPL-020

Disease modifying drugs in sclerosing orbital inflammatory syndrome: concept and application*Pakdel F.¹, Pirmarzashti N.², Haghighi A.³**¹Farabi Hospital, Eye Research Center, Tehran University of Medical Sciences, Ophthalmic Plastic & Reconstructive Surgery Department, Tehran, Iran, Islamic Republic of, ²Farabi Hospital, Eye Research Center, Tehran, Iran, Islamic Republic of, ³Rassoul Akram Hospital, Iran University of Medical Sciences, Rheumatology Department, Tehran, Iran, Islamic Republic of*

Purpose: To describe application of combination of anti-TNF- alpha agents and azathioprine in patients with resistant progressive sclerosing orbital inflammatory syndrome (sOIS). We propose the concept of disease modifying anti-orbital inflammatory drugs (DMAODs) and disease activity in the management of sOIS.

Method: In a prospective interventional study we used anti-TNF-a in biopsy proven patients with progressive sOIS. Disease activity was defined by presence of any of the criteria including, progressive decrease in visual function that could not be otherwise explained; orbital pain; peri-orbital swelling; progressive proptosis; emergence or worsening of limitation in extra-ocular motility; and progressive eyelid retraction.

Results: Five patients with sOIS were included. Mean age of them was 32. (range 19-53) years. Three had unilateral and two had bilateral involvement. Four had diffuse orbital involvement pattern and progressive worsening of visual functions, reduced extra-ocular motility and proptosis and one had bilateral lacrimal gland involvement. The disease was successfully controlled following the regimen of infliximab, adalimumab or etanercept combined with low dose prednisolone and azathioprine. Mean follow up of patients was 21.3 (range: 8-66) months. No significant drug adverse effect was detected in follow up time.

Conclusion: A regimen including etanercept, infliximab or adalimumab combined with azathioprine and low dose corticosteroid was effective in recalcitrant sOIS cases and could change the course of the disease. We propose that this regimen could be considered as biological disease modifying anti-orbital inflammatory drugs (DMAODs) regimen and can be regarded the mainstay of treatment of sOIS.

FREE PAPER PRESENTATIONS

FP03: Cataract, Refractive Surgery, Contact Lenses

FP-COL-021

Corneal edema after cataract surgery. A new treatment modality with the hyper CL™ Soft C.L*Feinbaum C.**Eye Care Center Group, Hertzliya, Israel*

Purpose: Corneal edema from inadequate endothelial pump function is one of the most common complications of cataract surgery. Various causes for this endothelial dysfunction can be divided into four categories including (a). mechanical injury, (b). inflammation/infection, (c). chemical injury, and (d). concurrent eye disease.

Setting: Multicenter study in Europe,

Methods: On a preliminary series of 7 eyes, the following results were obtained after 24 hours of wear of the Hyper-CL™ Soft contact lens after cataract surgery. Patients with pachymetry readings above 590µm were selected

for the treatment with the contact lens. The patient was fitted with the lens directly after surgery and pachymetry was performed. The patient returned 24 hours later and the lens was removed and pachymetry was performed again.

Results: Post-surgical pain diminished and visual acuity improved dramatically.

Mean reduction of Corneal Edema was 55 microns. There are indications that the Hyper CL™ soft contact lens act as reservoir for Ophthalmic medical drops without the drops interfering with lens parameters. In addition there was no control group in this experiment. No special treatment for edema was considered for corneal thicknesses below 590µm. Studies have showed that corneal thickness stabilized in 74% of patients within a week and in 26% of patients during the second week. Older patients and more primary corneal edema needed longer time to recover ($P < .0001$).

Conclusions: It can be stated that the Hyper CL™ is a good compliment for treating post-surgical corneal edema, with less usage of eye drops and fast recovery. The lens might feel uncomfortable initially. The visual acuity recovery will also be faster. The Hyper CL™ is a safe method for treatment of corneal edema post cataract surgery as well as after refractive lens exchange.

FP-REF-022

Transepithelial versus epithelium-off corneal cross-linking for progressive keratoconus: a meta-analysis of randomized controlled trials*Kobashi H.¹, Rong S.S.², Pappas A.³**¹Schepens Eye Research Institute, Massachusetts Eye and Ear Infirmary, Boston, United States, ²Massachusetts Eye and Ear Infirmary, Boston, United States, ³Howard University Hospital, Ophthalmology, Washington, DC, United States*

Purpose: To compare the efficacy of transepithelial corneal collagen cross-linking (CXL) to epithelium-off CXL in progressive keratoconus by summarizing randomized controlled trials (RCTs) using a meta-analysis.

Methods: The Cochrane databases and MEDLINE were searched for RCTs. Trials meeting the selection criteria were quality appraised, and the data were extracted by two independent authors. A comprehensive search was performed using the Cochrane Collaboration methodology to evaluate the clinical outcomes of transepithelial CXL and epithelium-off CXL for treating progressive keratoconus. The outcome parameters included maximum keratometry (Kmax), corneal thickness, best spectacle-corrected visual acuity (BSCVA), uncorrected visual acuity (UCVA), spherical equivalent (SE) refraction, and cylindrical refraction one year after each technique. We compared the changes in the above parameters between the two groups. Estimates were evaluated by weighted mean difference (WMD) and 95% confidence interval (CI) for absolute changes of the interested outcomes.

Results: We identified five RCTs involving 322 eyes that met the eligibility criteria for this meta-analysis. Epithelium-off CXL group showed significant better outcome in postoperative changes in Kmax (WMD = 1.11; 95% CI: 0.98 to 1.24; $P < 0.0001$), whereas transepithelial CXL represented significant better in corneal thickness (WMD = 5.02; 95% CI: 0.30 to 9.74; $P = 0.04$) and BSCVA (WMD = -0.05; 95% CI: -0.09 to -0.01; $P = 0.01$). There was no significant difference between the two groups in UCVA, SE or cylindrical refraction.

Conclusions: Although subjects in the transepithelial CXL group demonstrated a greater improvement in BSCVA compared with subjects in the epithelium-off CXL group at 1 year follow-up, transepithelial CXL has less impact on halting progressive keratoconus in terms of Kmax than epithelium-off CXL. A further meta-analysis with greater numbers of RCTs is required to confirm these preliminary findings.

FP-REF-023

Visual outcomes of femtoLASIK for correction of residual refractive error after optical-reconstructive surgery with iris-lens diaphragm implantation

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Purpose: To evaluate of the femtoLASIK method results in an induced refractive error correction after optical-reconstructive surgery with iris-lens diaphragm implantation.

Method: We observed 41 eyes (41 patients) with residual ametropia after the iris-lens diaphragm implantation in pre- and post-keratorefractive surgery, out of which 17 eyes were operated by the standard femtoLASIK technology - group I, 24 eyes by the topography-guided femtoLASIK technology - group II. The method of the laser correction was selected based on data of the keratopography, central pachymetry, the localization of the scar and the state of anterior surface of the cornea.

Results: After the keratorefractive surgery the spherical component decreased in the group I from -1.71 ± 0.75 D to -0.32 ± 0.11 D, in the group II from -2.34 ± 0.15 D to -0.25 ± 0.16 D. The average value of the cylindrical component also significantly decreased from 3.58 ± 1.17 D to 0.65 ± 0.22 D after the standard femtoLASIK and from 4.22 ± 1.11 D to 0.42 ± 0.34 D after the topography-guided femtoLASIK ($p < 0.05$). Uncorrected visual acuity compared with preoperative values significantly increased in the group I from 0.17 ± 0.08 to 0.62 ± 0.13 , in the group II from 0.08 ± 0.11 to 0.83 ± 0.15 . Loss of lines of corrected visual acuity was in no cases.

Conclusion: The femtoLASIK is effective and safe technology to achieve high functional results in the correction of residual ametropia in patients after optical-reconstructive surgery with iris-lens diaphragm implantation.

FP-CAT-025

Trifocal IOLs implantation to correct presbyopia in cataract patients: 4 year of experience and improvements in quality of vision clinical results

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Purpose: To evaluate visual and optical performances of cataract eyes after phacoemulsification and trifocal Intraocular Lens (IOL) (AT LISA tri 839MP, Carl Zeiss Meditec) implantation. Evaluation of a new method to improve visual outcomes based on eye selection and not on patients habits.

Method: 118 eyes of 73 patients mean age: 67.87 ± 11.49 years underwent uncomplicated phacoemulsification and trifocal IOL (AT LISA tri839MP, Carl Zeiss Meditec) implantation. Preloaded IOL was implanted using a BLUEMIXS 180 injector for a 2.4 corneal incision. Postoperatively, the following visual and refractive parameters were measured: distance (5m) near (40cm) and intermediate (80 cm) visual acuity, corneal topography and aberrometry, contrast sensitivity and defocus curve. Regular follow-up examinations were performed up to 4 years after surgery.

Results: Preoperative distance UCVA was 20/112. At 4 years, distance UCVA is 20/20, monocular and binocular uncorrected near vision and intermediate vision are 20/32. After four year experience with trifocal technology. In year 2015 trifocal technology was applied in 73% of patients that submitted cataract surgery in our surgical center. 94% of eyes achieved post operative refractive results within ± 0.50 diopter (sph equivalent).

Conclusion: AT LISA tri 839MP provided good distance and near as well as intermediate visual.

FP-CAT-026

Subfoveal choroidal thickness variation in patients undergoing cataract surgery and its relation with macular edema

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Purpose: To compare the variation in subfoveal choroidal thickness (SFCT) after cataract surgery.

Method: Population of 112 patients undergoing cataract surgery without relevant eye diseases or procedures having enough transparent media to perform an OCT Zeiss Cirrus HD with at least 6/10 quality. A prospective study performing OCT at baseline, one and 3 months after surgery in 112 healthy eyes undergoing cataract surgery. A macular cube 512x512 OCT and macular high definition line was performed previous to surgery and one and three months after. A complete ophthalmological exploration was done every visit. During surgery, any complication was described and classified.

Best corrected visual acuity (BCVA) was analyzed previous and subsequently. SFCT was measured with OCT in EDI mode by a single examiner.

Results were analyzed with t-student test for paired samples.

Results: 112 eyes were included BCVA from 20/400 to 20/60. Only 94 out of 112 patients had OCT with enough quality to measure subfoveal choroidal thickness with certainty enough due either to OCT limitations or thickest choroids.

Previous to cataract surgery patient presented SFCT of 224,9 μ m, after 1 month 223,6 μ m, and after 3 months 225,8 μ m, finding no difference between results.

Those patients who presented ME did not present a higher SFCT previous to surgery.

In those patients in which the posterior limit of choroid was not seen (thickest choroids) did not present higher incidence of ME.

None of the patients with intraoperative complications had ME (n=4).

Conclusion: Although other authors have found difference in subfoveal choroidal thickness in the evolution of patients undergoing cataract surgery; no difference was found in our study. Our study was not able to correlate subfoveal choroidal thickness with a higher risk of developing macular edema after cataract surgery. More studies should be required in order to confirm these results

FP-CAT-027

Predictive accuracy of intraocular lens calculation formula in eyes with keratoconus

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Purpose: To determine the refractive predictive error of Holladay 1 intraocular lens (IOL) calculation formula in eyes with keratoconus.

Method: A retrospective chart review was performed to identify patients with a diagnosis of keratoconus who underwent uncomplicated phacoemulsification cataract surgery with IOL implantation from July 2013 to November 2016 at a single academic center. Pre-operative topography (combined Placido-dual Scheimpflug analyzer) and IOL calculations (optical low-coherence reflectometer and partial coherence interferometer) were obtained as well as manifest refraction at least 3-weeks following surgery. The Holladay 1 formula was

used for IOL power calculations. Refractive prediction errors were calculated by subtracting the predicted refraction by Holladay 1 from the achieved manifest refraction.

Results: Twenty five eyes were included in the preliminary analysis. The mean patient age \pm standard deviation [range] was 68 ± 8 years [52 to 81 years]. The mean axial length (AL) was 25.62 ± 2.08 [22.75 to 30.27]. The mean SimK and the posterior keratometry obtained with the dual Scheimpflug analyzer were 47.95 ± 3.37 D [41.88 to 55.03] and -7.11 ± 0.89 D [-8.50 to -5.47], respectively. The mean prediction error was 1.06 ± 1.85 D [-4.83 to 4.57]. The mean absolute prediction error was 1.53 ± 1.46 D [0.05 to 4.83], and the median absolute prediction error was 1.05D. The refractive prediction errors increased with increasing anterior corneal power ($R^2 = 0.3753$, and $P < 0.05$).

Conclusion: Our study found hyperopic refractive prediction errors following cataract surgery in eyes with keratoconus. The steeper the anterior cornea, the higher the hyperopic refractive prediction error. Additional data will be presented to include a larger sample size.

FP-CAT-028

Scleral fixation of posteriorly dislocated intraocular lenses by 23-gauge vitrectomy without anterior segment approach

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Purpose: To evaluate visual outcomes, corneal changes, intraocular lens (IOL) stability, and complications after repositioning posteriorly dislocated IOLs and sulcus fixation with polyester sutures.

Method: Prospective consecutive case series of 29 eyes of 29 patients with dislocated IOL in the vitreous cavity, the patients underwent 23-gauge vitrectomy via the sulcus to rescue dislocated IOLs and fix them to the scleral wall with a previously looped nonabsorbable polyester suture. Main Outcome Measures were best corrected visual acuity (BCVA), corneal astigmatism, endothelial cell count, IOL stability, and postoperative complications.

Results: Mean follow-up time was 22.2 ± 15.3 months. mean BCVA improved from 0.42 ± 0.28 before surgery to 0.52 ± 0.25 ($p = 0.015$) at 1 month, which persisted to 12 months (0.57 ± 0.29). Neither corneal astigmatism nor endothelial cell count showed changes 1 year after surgery. Complications observed during follow up included IOL subluxation in 1 eye (3%), vitreous hemorrhage in 2 eyes (6%), transient hypotony in 2 eyes (6%), and cystic macular edema in 1 eye (3%). No patients presented retinal detachment.

Conclusion: This surgical technique proved successful in the management of dislocated IOL. Visual results were good and the complications were few and easily resolved.

FP-CAT-029

Povidone-iodine (PVI) against postoperative infections: is it as effective as we believe?

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The use of PVI for preoperative antisepsis in cataract surgery for prevention of endophthalmitis is mandatory according to the recommendations of ESCRS.

Purpose: To determine the effectiveness of PVI on the isolated pathogens from patients with endophthalmitis after uncomplicated phacoemulsification.

Method: Bacterial cultures were gained from conjunctiva of 8 patients with endophthalmitis: 3 gram-positive bacteria - *S. aureus* (2 strains), *S. saprophyticus* (1) - and 5 gram-negative microorganisms - nonfermenting *P. aeruginosa* (3), and enterobacteria: *E. coli* (1), *K. pneumoniae* (1). The antimicrobial activity of PVI was studied by diffusion into agar and was evaluated by measuring the diameter of the zone of retarded microbial growth. Microorganisms are considered as highly susceptible to 5% povidone-iodine if the diameter of zone delay their growth exceeded 25 mm, susceptible - 15 - 25 mm, nonsusceptible - 11 - 15 mm. Statistical analysis determined the mean with standard deviation ($M \pm \sigma$).

Results: We noted that the maximum antimicrobial activity among the tested microorganisms was observed for staphylococci - *S. aureus* (1st strain) - 24.4 ± 1.4 , *S. aureus* (2nd) - 23.2 ± 1.9 mm and *S. saprophyticus* - 24.8 ± 1.5 mm. But all isolated gram-negative rods was nonsusceptible for PVI - *P. aeruginosa* (1st strain) - 11.4 ± 0.9 mm, *P. aeruginosa* (2nd) - 13.2 ± 1.0 mm, *P. aeruginosa* (3rd) - 9.4 ± 2.3 mm, *E. coli* - 8.4 ± 1.6 mm, *K. pneumoniae* - 13.0 ± 1.1 mm.

Conclusion: Our, in vitro, studies have shown that 5% PVI ophthalmic solution is effective against gram-positive cocci, but it is not effective in reducing conjunctival nonfermenting gram-negative enterobacteria.

FP-CAT-030

Intraocular lens: economic considerations for public healthcare policies in cataract task forces

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Purpose: Evaluate the effectiveness and efficiency of cataract task forces for underprivileged communities, in a follow-up of 4 years, with the use of low price intraocular lenses.

Method: Retrospective study, based on a database of a sample of 58 patients randomly selected, submitted to a cataract task force in Pernambuco, Brazil. All surgeries were performed by the same surgeon using the same surgical technique and equipment. The data collected included pre-surgical visual acuity, postoperative visual acuity and late post-surgical visual acuity, biomicroscopy slitlamp and funduscopy evaluation. Patients with visual loss related to posterior capsule opacification was referred to Nd:YAG laser. For comparative purposes, it was used literature data from a hydrophobic intraocular lens. Cost of intraocular lens material and Nd:YAG laser capsulotomy for posterior capsule opacification was then evaluated and compared between the intraocular lenses

Results: The mean age of patients with Ioflex was 72 ± 10.2 years. Four years after surgery, 24 eyes (41.3%) had decreased visual acuity due to posterior capsule opacification. Two patients with posterior capsule opacification had decreased visual acuity due to intraocular lens opacification. Twelve eyes (20.7%) presented mild posterior capsule opacification with unchanged visual

acuity. The total cost of the post-surgical procedures represents 74.5% more in the initial budget. The total cost of hydrophilic lens and the postoperative complications per 100 was USD 7283.23. Based in the literature data, this lens had 7.47% of Nd:YAG laser treatment for posterior capsule opacification, and the total cost of hydrophobic intraocular lens and its postsurgical complications per 100 was USD 10130.21.

Conclusion: Ioflex intraocular lens is efficient in cataract task forces in short term, however, long-term scheduled follow-up of operated patients is required, with an easier access to avoid low visual acuity again and loss of project efficiency.

FREE PAPER PRESENTATIONS

FP04: Paediatric Ophthalmology & Strabismus and Oncology & Pathology

FP-PED-031

Retinopathy of prematurity screening using a new low cost hand held retinal camera (Epicam); a proof of concept pilot study

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Purpose: Retinopathy of prematurity (ROP) rarely causes childhood blindness in high income countries (HICs) however it is the leading cause of preventable blindness in middle-income countries (MICs) particularly in Asia. Lack of systematic screening and treatment systems (S&TS) in MICs is the main reason for this difference. Ophthalmology services that normally provide S&TS have failed to keep pace with the development of neonatology services in MICs for a number of complex and inter-related reasons with the dominant reason being the lack of appropriately trained and equipped eye care health staff.

Method: An 'Epicam' was provided to the lead paediatric ophthalmologist (MY) of Wahiddin Teaching Hospital in Makassar, South Sulawesi, Indonesia as part of the equipment capacity development strategy of the Vision 2020 links initiative led by NHS Tayside.

During the routine ROP screening ward round MY used the Epicam as the initial screening tool before performing the gold standard binocular indirect ophthalmoscope (BIO) examination. The aim of the acquired images was to include the optic disc and at least 1 disc diameter of the 4 major arcade vessels to allow a subsequent remote and independent assessment of the presence of plus disease in the 4 quadrants.

The selected images were then assessed by a range of ophthalmologists familiar with ROP screening for:

Assessment of the posterior pole vessels

Overall quality of the images for confident assessment of posterior pole vessels.

Results: The independent examiners showed strong correlation in agreement of assessment of the posterior pole vessels for the presence or absence of plus disease and in the quality of the images.

Conclusion: This proof of concept pilot study demonstrates that a new low cost hand held portable retinal camera (Epicam) is able to acquire images of the posterior pole of premature neonates for the purposes of retinopathy screening.

FP-PED-032

Tumors of eyelid in children-a clinicopathologic study

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Purpose: The purpose of this study is to describe the clinical findings and histopathologic characteristics of eyelid tumors and tumor like lesions.

Method: 163 children younger than 15 years old with histopathologically confirmed eyelid tumors treated at Ophthalmology Clinic Clinical Centre of Serbia, Belgrade during 1996-2005 were subjected to a retrospective analysis. We analyzed: age, gender, clinical features, clinical diagnosis, localization and histopathologic findings. The results were statistically tested with X² test.

Results: Totally 163 patients, 63 boys (38,65%) and 100 girls (61,35%), age 0-15 (mean 7,56 ±4,88) with eyelid tumors were included. All the time of excision majority were aged 0-5 years (44,17%), 11-15 years (34,97%) and 6-10 years (20,86%).

The most common clinical diagnosis were: cystis 70 (42,94%), tm.palp.obs. 35 (21,47%), haemangioma 12 (7,36%), papilloma 12 (7,36%), chalazion 11 (6,75%), granuloma 9 (5,52%).

Tumors were localized on the upper lids (74,84%), p=0,046, and lateral (51,53%), less frequently on the lower lids (25,15%).

Histopathologically were confirmed: cystis dermoides 77 (47,24%), papilloma squamocellulare cutis 16 (9,82%), haemangioma capillare 12 (7,36%), granuloma palpebrae 12 (7,36%), pilomatrixoma 7 (4,29%), granuloma corporis alieni 7 (4,29%), molluscum contagiosum 6 (3,68%), cystis epidermalis 6 (3,68%) and chalazion 5 (3,07%).

Clinical diagnosis is confirmed and precise in 120 children (73,6%), p<0,0001.

Conclusion: Dermoid cysts are the most common clinically and histopathologically confirmed eyelid tumors of children. Most of the tumors were located on the upper lids, especially on lateral sites. Tumors in all cases were benign. Malignant eyelid tumors are rare in children.

FP-PED-033

Common paediatric visual abnormalities and unintentional injury risk

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Purpose: Do children with common visual abnormalities have increased or differential unintentional injury risk?

Method: A longitudinal cohort of nearly 15,500 children were assessed for strabismus, amblyopia, mean refractive error of both eyes, stereopsis, contrast sensitivity, accommodation, convergence, colour vision, visual acuity and additional school measures in place for visual impairment. They were also extensively assessed for parental recall of unintentional injury via regular questionnaires as they grew. Stata14 was used to analyse the data, and multiple imputation to check the validity of findings.

Results: 80.6% of respondees had any injury over the study period with 30.8% having a more serious injury. A significant association was found between any injury and low visual acuity at age 7; poor stereopsis at 11; poor accommodation at 7, as well as between any serious injury and colour vision impairment. Multiple imputation results are being finalised but support these findings thus far.

Conclusion: Common visual abnormalities of childhood do offer some increased risk of unintentional injuries. Further investigation into this in this cohort is ongoing.

FP-PED-034

Endothelial morphology and corneal central thickness in pediatric age

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Purpose: Specular microscopy is routinely used in the study of ocular surface disease. However, the endothelial cell analysis is essential for determining its variation throughout life.

The aim of this study is to evaluate the endothelial morphology and central corneal thickness in healthy children between 5 and 15 years, assessing their variation according to age.

Method: Cross-sectional cohort study of 40 eyes of 40 healthy children, divided into two groups. Group 1: 20 children between 5-9 years; Group 2: 20 children between 10-15 years. Endothelial cell density (ECD), the coefficient of variation (CV) and the percentage of hexagonal cells (HEX) were assessed by non-contact specular microscopy. The central corneal thickness was assessed by anterior segment tomography.

Results: The ECD is higher in group 1 (2906.05 ± 344.91 cells / mm²) compared to group 2 (2597.89 ± 276.61 cel/mm²), ($p = 0.003$). There were no statistically significant differences between pachymetry in group 1 (556.35 ± 29.03 μm) and group 2 (537.90 ± 29.22 μm.) The ECD was negatively correlated with age ($r = -0.438$ and $p = 0.005$) and the HEX correlated negatively with the CV ($r = -0.345$, $p = 0.029$).

Conclusion: In healthy children, the ECD decreases with increasing age. However, there was no significant variation in the CV, HEX and pachymetry between the two age groups. The present study highlights the obtained data as a normative basis to further studies of ocular surface pathology in children.

FP-PED-035

Lasik and cataract refractive surgery in patients with strabismus

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Purpose: To compare the results obtained from strabismus deviation and functional ability related to vision before and after carrying out a Lasik and cataract surgery in adult strabismus patients.

Method: In the first group, less than 38 years (19 patients), we measured the horizontal deviation and we performed the VF14 questionnaire (8 patients) before and after a Lasik surgery. A second group, with more than 38 years (47 patients), the VF14 questionnaire was performed before and after a Lasik and cataract surgery. The questionnaire was performed 6 months before (25 patients) and 6 months after (19 patients) the surgery.

Results: In the first group, we found no statistically significant difference when comparing the horizontal deviation before and after a Lasik surgery. Neither in the values of VF14. In the second group, we found a statistically significant difference when comparing the results of the VF14 questionnaire before and after Lasik and cataract surgery. In the first 6 months after the surgery the result of VF14 improved in 9.47 points (values between 0 and 100), and in 7.85 points after 6 months.

Conclusion: Functional abilities, related to vision, improve when carrying out a Lasik refractive surgery or intraocular lens surgery in the case of patients with cataracts and strabismus older than 38 years.

FP-PED-037

Trochlear injuries: clinical characteristics and strabismus treatment

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Purpose: To report on superior oblique (SO) dysfunction secondary to trochlear injury in a series of 7 patients.

Methods: All patients sought treatment for vertical binocular diplopia. Trochlear damage was due to trauma in 6 patients and to inflammation secondary to Wegener's disease in one patient. A complete ophthalmological evaluation and orbital imaging was performed in all patients. Five patients had undergone strabismus surgery, one refused any treatment and one have been successfully treated with prisms.

Results: Three patients had a SO pulley detachment and five had inflammation within the area of the trochlea. Five patients had SO underaction with secondary Brown syndrome and two with inferior oblique overaction. Trochlear reattachment surgery was attempted in two cases.

Among the patients treated with strabismus surgery, four had a successful outcome, and one had a residual SO underaction despite a SO tendon tuck performed elsewhere.

Conclusions: Strabismus due to trochlear injury is difficult to treat. Trochlear detachment causes SO underaction and inflammation in the trochlear fossa may lead to intense scarring and limitation to elevation in adduction.

Thus, same side hypertropia when depressing the eye in adduction is often combined with hypotropia when attempting elevation in adduction. Trochlear reattachment surgery is frequently frustrating and strabismus surgery, that must be tailored to each particular case, is often necessary to relieve diplopia.

FP-PED-038

Anterior and nasal transposition versus 10 mm recession of inferior oblique muscle in unilateral superior oblique palsy

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Purpose: Anterior nasal transposition (ANTIO) is a relatively new inferior oblique (IO) weakening procedure converting the muscle into an anti-elevator and intorter in adduction, with few studies in literature. We compared anterior nasal transposition with 10 mm recession of inferior oblique for the surgical correction of unilateral superior oblique palsy.

Method: A randomized prospective intervention study was carried out in 20 patients, with unilateral superior oblique palsy. ANTIO and 10 mm IO recession was done in 10 patients each. Pre and post operative vertical deviation and pattern by prism cover test, objective torsion by fundus photography, IO overaction and abnormal head posture by goniometer were measured and compared before and after the operation in each group.

Results: Mean age was 13.75 years with 13 females and 7 males. The amount of vertical deviation in primary position corrected by ANTIO was 15.9 prism dioptres and by 10 mm IO recession was 10.6 prism dioptres which was statistically significant. ($p=0.002$). There was a mean reduction in IO overaction of 2.5 and 1.6 units by ANTIO and IO recession respectively.

The amount of V pattern corrected with ANTIO was 8.3 prism dioptres and by 10 mm IO recession was 5.5 prism dioptres which achieved statistical significance ($p=0.002$).

The amount of torsion corrected in group A was 1.7 grade and by group B was 0.8 grade which was statistically significant. ($p=0.041$). The mean correction

in abnormal head posture achieved by ANTIO was 7.87 degrees and by 10 mm IO recession was 5.99 degrees which was not statistically significant.

Conclusion: In unilateral superior oblique palsy, unilateral ANTIO on the affected eye corrected larger amounts of vertical deviation, V pattern, IO overaction and objective extorsion than 10 mm IO recession and both appear to have similar results in correcting abnormal head posture.

FP-PED-039

Consensus generation of a minimum set of outcome measures for auditing strabismus treatments - a Delphi exercise

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Purpose: To identify the set of outcome measures considered most important and practical to collect by strabismus specialists for auditing the effectiveness of strabismus treatments.

Methods: An online Delphi exercise using the RAND/UCLA appropriateness method was developed using literature review and expert consensus and administered via Survey Monkey.

Results: 64 strabismus specialists took part in Round One and 38 completed Round Two. The median time spent on Rounds One and Two respectively were 10 minutes 15 seconds and 5 minutes 38 seconds. 98% of respondents had completed a strabismus audit in the past of whom 15.7% used an electronic medical record.

A range of strabismus tables were used to plan surgery. Participants agreed on 12 baseline data points, 8 indications for strabismus surgery, 4 per-operative complications, 11 post-operative complications and 10 clinical outcomes that were considered important and practical to collect. 97.2% agreed that surgical target should be a range e.g. (0-10 dioptres Eso) and there was consensus that with a few exceptions angle measurements pre- and post-operatively should be measured using habitual refractive correction (the same at each visit).

A reduction of, or alleviation of, patient-reported symptoms assessed by patient record notes or questionnaire was considered the most important success measure but there was uncertainty about the practicality of collecting this data in routine practice. 84.6% of respondents felt that outcomes should be recorded 3 months post-operatively and 49.2% at 12 months.

Conclusion: There was broad consensus on a minimum dataset for reporting the outcomes of strabismus treatments and the timing of outcome measurement which can inform the development of electronic medical records for strabismus treatments.

The importance of developing the infrastructure to routinely measure patient reported outcomes for strabismus treatments is highlighted.

FREE PAPER PRESENTATIONS

FP05: Neuro-ophthalmology, Electrophysiology

FP-EPH-041

Research on the new electroretinogram function that can move the centre of the multifocal hexagonal stimulus array

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Purpose: We can examine declines in visual sensitivity at arbitrary points on the retina using a precise perimetry device with a fundus camera function. However, the retinal layer causing the decline in visual sensitivity can not be identified. To investigate cryptogenic diseases, such as macular dystrophy, acute zonal occult outer retinopathy and multiple evanescent white dot syndrome, we studied a new electroretinogram function that can move the centre of the multifocal hexagonal stimulus array.

Method: An electroretinographic optical system, specifically perimetric optical system, was added to an experimental device with the same optical system as a fundus camera. We also added an Edmund infrared camera EO-0413, a lens with a focal length of 25 mm, a 45-degree cold mirror, a halogen lamp and an 8-inch monitor. Software was generated to show the multifocal hexagonal stimulus array on the monitor using C++Builder XE8 and to move the centre of the array up and down as well as back and forth. We used National Instruments' USB-6008 and their system design platform LabVIEW 2016 for data retrieval. The Nihon Kohden plate electrode NE-113As were used to measure electrodermal activities around the eyes. And the Mayo Corp. contact lens electrode Z7816s were used to measure electrical potentials of retina.

Results: We used a multifocal hexagonal stimulus array with 37 elements in the software. The centre of the multifocal hexagonal stimulus array could be adjusted to the same position as the examination target of the precise perimetry.

Conclusion: We successfully added this new electroretinogram function to the experimental ophthalmologic device.

FP-NEO-042

Ophthalmoparesis of the III cranial nerve due to persistent trigeminal artery

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Purpose: To describe a clinical case of complete ophthalmoparesis of the third cranial nerve due to a vascular variant of normality.

Method: 63 year-old patient with a medical history of developed exophthalmos in the left eye, alongside diplopia, tearing and palpebral ptosis. In the ophthalmological explorations, a 0.5 of visual disturbance is found in the right eye and 0.3 in the left one, apart from a limitation in the oculomotor motility to the adduction and supraversion. In the biomicroscopy of the anterior segment, hyporreactive mydriasis is seen, intraocular pressure in that same eye is 22 mm/Hg. The ocular fundus is normal in both eyes, but the visual field is totally pathological in the left eye.

Results: In the CAT scan of the orbits show a soft tissue density. It occupies the orbital apex, the optic foramen, and the left cavernous sinus, the MRI

detects anatomical variant consisting of a PTA which is conducted from the left carotid loop to the middle third of the basilar artery. Once the cause of a complete ophthalmoparesis of cranial nerve III by compression of PTA at mesencephalic level is confirmed.

Conclusion: PTA is a rare anatomical variant, its diagnosis in most cases is typically accidental because it does not present clinical manifestations. Oculomotor paralysis would occupy, this way, the third place in frequency. Due to this, it is a pathology that is taken into account whenever carrying out a differential diagnosis in response to these alterations. Patients should be evaluated neuroradiologically.

FP-NEO-043

5 years follow-up of retina nerve fiber layer atrophy in patients with multiple sclerosis

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Purpose: To evaluate changes in the retinal nerve fiber layer (RNFL) thicknesses in multiple sclerosis (MS) patients compared with healthy subjects during 5 years of follow up. To compare ability of optical coherence tomography (OCT) and visual field test to detect axonal damage.

Methods: Fifty eyes of 50 MS patients and 50 eyes of 50 healthy controls were included. All of them underwent measurements of best corrected visual acuity (BCVA) refractive defect, color vision, visual field, and OCT (Spectralis OCT). All of them were annual re-evaluated during 5 years. Change in both groups (MS patients and healthy controls) were evaluated and compared using paired T Student's test

Results: We found decrease in all RNFL thicknesses during the 5 years follow-up in both groups (patients and controls), and the changes were significant higher in MS group (T Student's, $p < 0.05$). No differences were found between patients and controls in visual functional tests (BCVA, color vision test and visual field). Higher change was found in inferior quadrant (113.67 in baseline and 105.39 μm in 5 years visit in MS group, $p < 0.001$). Correlations between structural and functional tests were found, but not between the changes in both tests during the 5 years follow up.

Conclusions: MS progression causes axonal damage that can be detected by OCT but not by visual functional tests.

FP-NEO-044

Transient monocular vision loss associated with ipsilateral Claude-Bernard-Horner syndrome - a case report

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Purpose: To present a case of amaurosis fugax associated with Horner syndrome from our institution.

Methods: A 50 year-old, otherwise healthy male patient with no history of trauma presented to the Emergency Department reporting multiple episodes

of transient, monocular central vision loss in his left eye (OS) with 4 days of onset, accompanied by ipsilateral cervical and temple pain. On ophthalmological examination, best-corrected visual acuity (logMAR) was 0 in the right eye (OD) and +0.4 in OS, without dyschromatopsia. Left blepharoptosis and a miotic, slowly reacting OS pupil were observed. No changes were seen on slit-lamp biomicroscopy and fundus examination. Neurologic examination revealed right hemiparesis and hemihypoesthesia.

Results: Neuroimaging revealed non-occlusive dissection of the left post-bulbar internal carotid artery, with an intra-mural hematoma and pseudoaneurysm, without extension to its petrous portion. Duplex scanning documented compensatory phenomenon of the ipsilateral ophthalmic artery, and transcranial Doppler ultrasound showed left medial cerebral artery hypoperfusion. In addition, ischemia in the left frontal lobe was observed. Investigation was negative for cardiovascular risk factors and pro-thrombotic states. At three-month follow-up, persistent left Horner syndrome was observed.

Conclusions: Craniocervical artery dissection is relatively rare, but should be suspected in patients with acute-onset Horner syndrome, particularly when associated with ipsilateral head or neck pain; other risk factors include mid-age, cardiovascular risk factors, or hypercoagulable states. Nevertheless, presentation with amaurosis fugax associated with Horner syndrome may be relatively uncommon. Urgent neuroimaging and neurologic consultation are warranted, and timely preventive treatment should be started in order to prevent ocular or cerebral infarction with resulting neurologic manifestations, as occurred in our patient.

FP-NEO-045

Right hemifacial tumor with loss of vision in the left eye?! A case report

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Purpose: To present a case of compressive optic neuropathy from our institution.

Methods: A 36 year-old female patient from Africa was flown to our institution for medical observation and diagnosis of a rapidly-growing right hemifacial tumor with 10 months' evolution, involving the right orbit. In addition, she reported progressive, severe loss of vision in her left eye (OS) over the previous month. On physical examination, a voluminous tumor of the right hemiface was observed, with invasion of the ipsilateral orbit and extrusion of the right eye from the orbital cavity. Best-corrected visual acuity in OD and OS was no light perception. OS had complete ophthalmoplegia, and pupillary reflexes were absent.

Results: Fundus examination revealed optic disc pallor in OS. Computerized tomography (CT) documented an expansive facial lesion invading the right orbit, nasal fossae, anterior cranial fossa, sellar and parasellar regions, extending to the middle cranial fossa. The left ethmoidal lamina papyracea was eroded, with tumor extension to the left orbital cavity, compressing the orbital apex. Biopsy of the lesion revealed a poorly differentiated spindle-cell sarcoma.

Conclusions: Soft-tissue sarcomas may have a very rapid and aggressive course; timely clinical and imaging diagnosis and management is of the essence. Our patient's prognosis was negatively affected by the geographic differences in healthcare systems, which caused significant delay between symptom onset and diagnosis. In this case, left compressive optic neuropathy was most likely multifactorial due to orbital apex syndrome, but also possibly due to intracranial invasion.

FP-NEO-047

Is clinical course of optic neuropathy associated with oxidative damage and dynamics of antioxidant response?: a case-control study in patients with non arteritic ischemic optic neuropathies

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Purpose: Optic neuropathy is recognized one of the most frequent causes of vision loss in elder population, which 85% of them are in nonarterial anterior ischemic optic neuropathy (NAION) form. The nervous system is rich in lipids and quite sensitive to oxidative damage and oxidative stress plays a crucial role in neurologic damage. In this comprehensive study, we aimed to evaluate the optic neuropathy-oxidative stress connection in a large series.

Method: Our study included 35 patients with NAION and 35 healthy individuals. Biochemical data and expansive clinical findings for the patient group were noted. In order to assess the oxidative stress, markers of this destructive process, main antioxidants, along with SOD and GSH systems were studied. As the oxidative profiles were compared between two groups, correlation of each biochemical-clinical parameter with oxidative stress and specific antioxidant responses was also evaluated.

Results: In comparison to the control group, oxidative stress parameters varied significantly in the patient group. For vitamin E and MDA, extremely significant increases were found. As significant and extremely significant correlations have been found between clinical findings and oxidative stress parameters, internal correlations between the clinical and biochemical data were observed as well.

Conclusion: In this study, not only clear evidences were obtained regarding optic neuropathy-oxidative stress connection, but certain interactions of antioxidants that have unique neurohormone-like activities and regulatory mechanisms were pointed out as well. A more comprehensive understanding of oxidative damage and response dynamics will enable us to determine more efficient diagnosis, follow-up and treatment strategies and facilitate to answer important questions which remain unknown about this disease.

FP-NEO-048

Saethre-Chotzen syndrome associated with Adie's syndrome: case report

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Purpose: The objective in this case report is to describe the association of both this syndrome without any other ophthalmologic disorder.

Case report: M.A.O., 31-year-old, female, sent to the ophthalmologist because of headaches and to check if the refraction. She brings a karyotype exam dated from december, 03,1990 showing a result of 46 karyotype's, XX, and Saethre-Chotzen syndrome. Taking 50mg fluoxetine per day. ectosopia presents a anisocoria with pupil of the left eye bigger than the right. Associated with a lower straight pupil refraction from the left eye and slower consensual

reflexion of the same eye. Extrinsic ocular movement preserved. pilocarpine 0.125% test with contraction of left pupil. Retina without any disorder. Further investigation came out with the diagnosis of Adie's pupil.

Conclusion: When facing a complex syndrome like the Saethre-Chotzen it is important to observe and report the new out comes for the better understand of the fisiopathology.

FP-NEO-049

Evaluation of structural and functional changes in the retina and optic nerve in patients of Alzheimer's disease

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Purpose: To evaluate the structural and functional changes in the retina and optic nerve of patients with Alzheimer's disease

Method: A cross-sectional study of 30 eyes of 15 patients with AD was conducted to evaluate visual acuity, colour vision, contrast sensitivity, visual field, pattern visual evoked response (pVER), pattern electroretinogram (pERG) and multifocal electroretinogram (mfERG). Retinal nerve fiber layer (RNFL) and retinal ganglion cell-inner plexiform layer (RGCL-IPL) complex were measured using SD-OCT.

Results: Patients of AD ranged from Stages 4-6 of dementia with median of 4 on Global Deterioration Scale and a median of 1 on Washington University CDR Scale with mean sum-of-boxes score of 5.37. Average disease duration was 2.46 ± 1.39 years. Visual acuity, colour vision and visual fields were within normal limits with mean contrast sensitivity being 1.36 ± 0.19 . Average RNFL and RGCL-IPL thicknesses were $62.34 \pm 19.86 \mu\text{m}$ and $60.92 \pm 20.94 \mu\text{m}$ respectively. P100 wave had mean amplitude of $8.25 \pm 3.2 \mu\text{V}$ and mean latency period of 120.39 ± 6.85 ms. P50 wave had mean amplitude of $1.5 \pm 0.69 \mu\text{V}$ and mean latency period of 65.64 ± 10.85 ms and N95 wave had mean amplitude of $-1.95 \pm 0.51 \mu\text{V}$ and mean latency period of 102 ± 3.49 ms. MfERG showed a generalised depression with mean P1 amplitude of 1184.61 ± 497.26 nV and implicit time of 50.99 ± 6.05 ms in central 2 degrees ring and 1033.56 ± 297.71 nV and 45.39 ± 2.29 ms respectively in the peripheral >15 degrees ring. Disease duration correlated weakly yet significantly with mean RNFL thickness reduction ($p < 0.05$) and increase in P1 implicit time ($p < 0.05$). Disease severity significantly correlated with increase in P1 implicit time ($p < 0.05$).

Conclusion: Electrophysiological dysfunction is found in patients of AD without significant visual disability. GCL-IPL and RNFL thinning occurs in patients of AD early in the disease process and may be developed as a disease severity and prognostic marker in future.

FP-NEO-050

Idebenone (Raxone®) for the treatment of visual impairment in Leber's hereditary optic neuropathy (LHON)

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Purpose: LHON, an orphan mitochondrial disorder affecting retinal ganglion cells, causes severe visual impairment, from which spontaneous recovery is rare. Over 90% of patients harbor one of three mitochondrial DNA mutations

impacting complex I of the respiratory chain. Idebenone (Raxone®), a short-chain benzoquinone, interacts with the electron transport chain, facilitating mitochondrial electron flux. These properties prompted the investigation of Raxone in the treatment of LHON. Here, we summarize the available evidence concerning the efficacy of Raxone, collected from a clinical trial and from clinical practice.

Method: Visual acuity data from the randomized, placebo-controlled study (RHODOS), case reports, retrospective cohort studies, an Expanded Access Program (EAP) and a natural history case report survey have been collated in a database of over 500 patients. The clinical outcome for idebenone-treated and untreated patients was assessed with respect to prevention of vision loss, a clinically relevant stabilization (CRS), and recovery of lost vision, a clinically relevant recovery (CRR).

Results: CRS was observed more frequently in idebenone-treated patients (RHODOS and EAP) compared to the datasets of untreated patients, meaning fewer progressed to severe vision loss (≥ 1.0 logMAR). After 6 months of treatment, 30.2% and 30.6% of patients experienced a CRR from baseline in RHODOS and the EAP, respectively. This compared favorably to the RHODOS placebo group (10.3%). An extended treatment duration in the EAP (average of 16 months) resulted in CRR (from nadir) in 49.3% of patients, with these patients regaining, on average, the equivalent of 6 lines on an ETDRS chart.

Conclusion: A large body of evidence demonstrates the clinically relevant benefit of Raxone treatment in patients with LHON. These findings are of particular importance, as Raxone is the first, and currently only, EMA-approved treatment for this life-altering condition.

FREE PAPER PRESENTATIONS
FP06: Retina (Medical)

FP-RET-051

Treat & extend versus monitor & extend for the treatment of neovascular age-related macular degeneration (nAMD)

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Purpose: The current mainstay treatment for nAMD is intra-vitreous injections of anti-VEGF agents by treat and extend (T&E), monitor and extend (M&E) or PRN regime. Literature remains inconclusive as to which is the better regime. The purpose of this study is to compare the visual outcomes in patients diagnosed with nAMD receiving T&E versus M&E regime.

Method: A retrospective study, reviewing the treatment regimes of 78 patients, 92 eyes, diagnosed with neovascular AMD. Patients were treated with either Ranibizumab or Aflibercept, under the T&E (n=21 eyes) or M&E (n=53 eyes) regime. Patients who switched treatment regime midway were included as a separate entity (n=18 eyes). Primary outcome measure is the mean change in best corrected visual acuity (BCVA) EDTRS letters from baseline to the final appointment. Further outcome measures include the number of injections and mean change in CRT.

Results: The M&E regime showed a mean improvement in BCVA of 2.19 letters and CRT of 110.47 μ m. The T&E regime displayed a mean improvement of 1.0 letters and CRT of 43.7 μ m. On average, 9.6 injections were given to M&E while T&E received 12.2. Lucentis M & E patients had better visual outcomes than Eylea M&E patients (2.19 versus 1.45 letters, 110.47 versus 90.15 μ m). 76% of patients were followed up for more than 12 months.

Conclusion: The M&E regime shows comparable visual outcomes to the T&E regime. M&E Patients receiving Lucentis have better visual outcomes in comparison to the Eylea. 76% of patients were followed up for greater than 12 months.

FP-RET-052

Efficacy of 'Treat and Extend' with ranibizumab for diabetic macular oedema: 30 month outcomes

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Purpose: To present the 30 month visual outcomes using a 'Treat and Extend' (TrEx) regime treating diabetic macular oedema (DMO) with ranibizumab.

Method: Diabetic patients in the UK with DMO and central macular thickness (CMT) of 400 μ m or can receive intravitreal ranibizumab in line with NICE TA 274. From September 2014 patients were changed from prn treatment to TrEx. Patients were induced with monthly ranibizumab until the vision was stable (± 5 letters over 3 visits). An injection was given and the interval increased by 1 month at each visit if the vision remained stable, and if unstable an injection was given and the interval was reduced by 1 month. The mean best corrected LogMAR visual acuities at induction (BCVA-I) and at intervals to 30 months were calculated. A second analysis using the mean vision at the onset of Treat and Extend (BCVA-TrEx) was calculated to specifically determine the stability of vision once TrEx had started. Patients were grouped by baseline BCVA-I (< 35, 35-55, 56-73, >73 letters) for sub-group analysis.

Results: 180 eyes of 144 patients were reviewed of which 81 were male and 63 were female with a mean age of 67.3 years (67.1 M, 67.8 F). The mean baseline BCVA-I was 59.6 letters increasing to 73.7 at 30 months. The mean duration from induction to TrEx was 7.3 months (range 3-20 months) and the mean baseline BCVA-TrEx was 68.4 letters. The mean BCVA-TrEx had increased by +7.9 letters at 12 months, by +13.4 at 24 months and +17.0 at 30 months. More letters were gained by those with a poorer baseline BCVA-I. The mean number of injections before TrEx was 4.2, with an additional 3.7 at 12 months and 5.5 by 24 months.

Conclusion: Diabetic patients in this study with visual impairment from DMO, on average improved their vision at 30 months once started on a 'Treat and Extend' regime with ranibizumab intravitreal injections. As fewer clinic visits were required than prn patients, the injection clinic capacity was increased.

FP-RET-053

Ranibizumab versus dexamethasone implant for central retinal vein occlusion: the RANIDEX study

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Purpose: The purpose of the study was to compare the anatomical and functional outcomes of intravitreal ranibizumab and intravitreal dexamethasone implant in treatment naïve patients with macular edema (ME) secondary to central retinal vein occlusion (CRVO) in a 12-month follow-up.

Method: Participants in the study were 42 treatment naïve patients with ME due to CRVO, who were treated with either intravitreal 0.5 mg ranibizumab (n=25) or intravitreal 0.7 mg dexamethasone implant (n=17). The main out-

comes included the mean change in best corrected visual acuity (BCVA) and central subfield thickness (CST) at month 12 compared to baseline in the two groups.

Results: At the end of the 12-month follow-up, patients in ranibizumab group gained +8.4 letters, while patients in dexamethasone group +6.9 letters and there was no statistically significant difference in BCVA change between the two groups. Accordingly, there was a significant reduction in CST in both groups without a significant difference in CST change between the two groups. However, there was a recurrence in ME at month 5-6 at dexamethasone group.

Conclusion: Both ranibizumab and dexamethasone implant were found to be safe and effective at the 12-month follow-up in patients with ME secondary to CRVO in real-life data of treatment naïve patients. However, since there was a recurrence in ME at month 5-6 in dexamethasone group, we suggested that intravitreal injection of dexamethasone implant should be potentially administered sooner than 6 months.

FP-RET-054

Intravitreal dexamethasone implant effect on aqueous humour concentration of inflammatory mediators in diabetic macular edema

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Purpose: To assess the evolution of the aqueous humour (AH) concentration of several inflammatory mediators following dexamethasone intravitreal implant (Ozurdex) injection for diabetic macular edema (DME).

Method: Prospective interventional case series study. Setting: clinical practice of a tertiary referral Hospital. Study population: 10 eyes of 8 patients with inclusion criteria (DME and cataract) and no exclusion factors (proliferative diabetic retinopathy, glaucoma or uncontrolled intraocular pressure, previous ocular surgery, previous intravitreal injection of any kind less than 6 months ago). Intervention: Ozurdex injection and AH sample at baseline (T1); phacoemulsification and intraocular lens implantation with AH sampling 2 months afterwards (T2); Ozurdex injection and AH sample whenever DME relapses (T3). Main outcome measure: change in AH levels of inflammatory mediators (IFN- γ , IL-1 β , IL-3, IL-6, IL-8, IL-10, MCP-1, IP-10, TNF- α and VEGF).

Results: IL-1 β , IL-10 and IFN- γ remained undetectable and IL-3, TNF- α and VEGF did not statistically change with the intervention. Rest of median AH levels changed as follows: IL-6 increased in T3 compared to T1 ($p < 0.001$) and T2 ($p = 0.01$); IL-8 increased in T2 compared to T1 ($p < 0.001$) in addition to T3 to T1 ($p < 0.001$) and T3 to T2 ($p < 0.001$); IP-10 decreased in T2 compared to T1 ($p = 0.002$) but, however, increased in T3 compared to T1 ($p < 0.001$) and T3 to T2 ($p < 0.001$); MCP-1 increased in T3 compared to T1 ($p < 0.001$) and T3 to T2 ($p < 0.001$).

Conclusion: MCP-1 and IP-10 could be considered a consistent driving actor of DME evolution with Ozurdex treatment. IL-6 and IL-8 could be mostly involved in DME relapse in such a setting. More studies are needed to further clarify on the topic of steroid drugs effect on AH factors in DME cases.

FP-RET-055

Single-center visual and anatomical outcomes of intravitreal injection of iluvien

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Purpose: To evaluate the improvement in visual acuity (VA) and the decrease in central retinal thickness (CRT) after single intravitreal injection of Iluvien (flucinolone acetonide) in pseudophakic patients unresponsive to current treatment options for diabetic macular oedema.

Method: 20 eyes of 16 patients were included of which 4 were treated bilaterally. Age ranged from 44 to 83 years. 55% had previous macular laser with pan retinal photocoagulation therapy, 30% had only macular laser whereas 15% had no prior laser therapy. 80% of the patients received previous anti-VEGF injections, 30% had intravitreal triamcinolone, 15% had dexamethasone implant, whereas 15% did not receive any intravitreal treatment. 35% of patients had previous vitrectomy. 30% had combined cataract surgery with Iluvien implant, whereas one patient had combined vitrectomy and Iluvien injection.

Results: At one month VA in 19/20 patients there was a mean increase of 3.9 letters, and CRT in 18/20 patients there was a mean decrease of 66.5 μ m. At 12 months follow-up VA and CRT were known for 15/20 patients - there was mean increase of 4.4 letters and CRT decrease of 165 μ m. 15% of patients needed additional anti-VEGF therapy within the first year after Iluvien injection. 45% of patients maintained VA gain throughout the follow-up period and in some cases CRT continued to decrease up to 1 year.

Conclusion: Iluvien is a safe treatment option with good initial results. At 12 months follow-up 86.6% of patients had improvement in visual acuity with 13.3% of patients achieving more than 15 letters gain.

FP-RET-056

The unwanted effects and unusual complications of anti-VEGF therapy

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Purpose: To report 4 rare cases of the possible side effects and complications caused by antiangiogenic therapy.

Method: Retrospective, non-comparative, case series. 1235 intravitreal bevacizumab injections were performed on patients with different pathology in our hospital from October 2010 to October 2016. Full ophthalmological examinations were done in all patients before and after treatment.

Results: Case 1. The objective of the treatment was regression of the occult choroidal neovascularization (NV) in the patient with age-related macular degeneration. One week after treatment we noticed massive subretinal hemorrhage due to retinal pigment epithelial rupture. The possible causes of complication are idiopathic rupture, eyeball deformation during manipulation, strangulation of vitreous fibers in point of injection with following vitreoretinal traction.

Case 2. The aim of bevacizumab injection was regression of choroidal NV in chronic toxoplasmosis uveitis in young lady. On the next day after injection flat choroidal effusion was seen which disappeared in a week on steroidal treatment. Possible causes are chronic nature of toxoplasmosis chorioretinitis, influence of needle during injection and mechanical damage during fast flow of medicine at the time of injection.

Case 3. Subconjunctival injection of bevacizumab was done near limbus to control corneal NV in patient with vascularized corneal opacity. Corneal perforation occurred one week after bevacizumab treatment.

Case 4. The aim of bevacizumab injection was the regression of the disc NV in patient with proliferative diabetic retinopathy. After 2 weeks it was diagnosed the thickness of the fibrosis which had the tractional effect on the macula by OCT date.

Conclusion: Patients should be thoroughly examined before anti-VEGF treatment to minimize the risk of complications. An early examination is required in follow-up after bevacizumab injection to timely diagnose possible complications.

FP-RET-057

Clinical and economic effects two years after converting treatment resistant eyes with neovascular age-related macular degeneration to aflibercept with a treat and extend protocol

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Purpose: To study clinical effects and perform an economic evaluation of converting to aflibercept using a treat and extend (T&E) strategy in eyes with treatment resistant neovascular age-related macular degeneration (nAMD).

Method: We included 50 eyes from 47 patients with persistent macular fluid despite monthly treatment with ranibizumab or bevacizumab that were converted to 2.0 mg aflibercept in accordance with a T&E protocol. Data on visual acuity and anatomical function were extracted from our hospital quality register for nAMD at baseline and after 2 years-follow-up.

Results: 43 eyes were converted from bevacizumab and 7 from ranibizumab. After 2 years of aflibercept treatment, OCT evaluation showed a dry macula in 31 eyes (62%) and less macular fluid in 11 eyes (22%). One eye (2%) showed no change in macular fluid, while 2 eyes (4%) showed worsening. After 2 years of aflibercept treatment, mean visual acuity was decreased equal to 3.5 letters compared to baseline ($p=0.005$). Treatment burden in terms of mean number of injections was reduced from an expected 12 injections per year if bevacizumab/ranibizumab treatment was continued to 9.2 ± 1.5 (year 1) and 8.0 ± 2.7 (year 2) injections after converting to aflibercept. Still, at the 2 year visit 24 eyes (48%) received treatment more frequently than the recommended aflibercept label of an 8 week injection interval. The overall cost per saved consultation was calculated to €433 over the two year period.

Conclusion: A majority of eyes with persistent macular fluid despite monthly treatment with ranibizumab or bevacizumab showed improved anatomic outcomes two years after converting to aflibercept using a T&E strategy. There was no improvement in visual acuity and a mean reduction of 3.4 consultations per year with a calculated cost of €433 per saved consultations over the two year period.

FP-RET-058

Intravitreal anti-vascular endothelial growth factor for choroidal neovascularization due to pathologic myopia: five years visual and anatomical outcomes

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Purpose: To evaluate the long-term anatomical and visual outcomes of anti-vascular endothelial growth factor (VEGF) therapy for choroidal neovascularization (CNV) secondary to pathological myopia.

Method: Single center observational case series of patients with CNV secondary to pathologic myopia treated with one anti-VEGF injection followed by a *pro re nata* (PRN) regimen between January 2009 and December 2011. Patients' demographic data, best-corrected visual acuity (BCVA) measured with an ETDRS chart, Central Macular Thickness (CMT) and number of intravitreal injections were recorded. Optical Coherence Tomography (OCT) was done at each visit and fluorescein angiography at baseline and if neovascular activity was suspected. Retreatment criteria included reduction in BCVA of 5 or more letters from the previous examination, new CNV or haemorrhage at fundus examination, any fluid on OCT or leakage on fluorescein angiography.

Results: 41 eyes from 37 patients of mean age of $59,3 \pm 13,7$ years were included. Mean follow-up was 5,1 years and the mean number of anti-VEGF injections was $3,4 \pm 2,9$ mean (range 1-15). PRN treatment have a mean duration of $20,3 \pm 24,9$ months. Ranibizumab was the first line therapy in 56,1% of the cases and bevacizumab in 43,9%. Switch of anti-VEGF therapy was performed in 7,3% of the cases. CMT was reduced by an average of $68,5 \mu\text{m}$ from $307,9 \pm 125,3 \mu\text{m}$ to $250,9 \pm 93,8 \mu\text{m}$ ($p=0,008$) at the final visit. BCVA improved from $37,4 \pm 21,3$ letters at baseline to $43,8 \pm 26,0$ letters at the final visit ($P=0,43$; mean visual gain: $+9,6 \pm 28,6$ letters). Thirteen eyes (31,8%) experienced a decline in BCVA during the follow-up, which was attributable in 9 cases to myopic atrophic changes and in 4 cases to myopic foveoschisis.

Conclusion: Myopic CNV treated with intravitreal anti-VEGF on a PRN basis have favourable visual and anatomical outcomes in a long-term analysis. Nevertheless, progressive chorioretinal atrophy involving the macula and foveoschisis limits the visual gain.

FP-RET-059

Effect of conventional and modified focal laser on visual acuity and retinal thickening in eyes with chronic vascular macular oedema treated previously by different IVT injections of ANTI-VEGF drugs

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The aim of this study is to report visual acuity and anatomic changes from baseline to 24 months after Conventional and modified Focal laser in eyes with Chronic Vascular Maculopathy treated by different of ANTIVEGF drugs and they had no improvement of visual outcome.

Methods: Follow up of 98 eyes with Chronic Vascular Maculopathy who underwent Focal Macular Laser All these patients underwent VA ,slit lamp exam of ant Segment,IOP check, after dilation detailed examination of Macula ,and areas of Retinal thickening recorded ,OCT,FFA, and VF data were analysed .Patients were followed up for a minimum of 24 months and VA at the end 3-4

months was taken as final VA after Laser Results. Among the 98 eyes having Chronic Vascular Maculopathy and they had no improvement by different of ANTIVEGF.76(77.55)eyes were received Focal Macular laser ,12(12.24%) eyes having combined Focal and PRP and 10(10.2%) eyes having Focal and sectorial PRP 24 month follow up there is a huge improvement in visual acuity 3-4 in 45(45.91%) eyes.the median central subfield Retinal thickening decrease by 61-91 microns,median total Macular volume decreases by 0.5 mm³,and median fluorescein leakage area with Focal Macular laser decreased by 1.1 disc areas 38(84.44%)eyes having stable improvement of visual outcome and 7(15.55%) eyes having deterioration of their baseline visual acuity and when repeated Focal Macular laser to this group,there was 2(28.57%)eyes having two lines improvement.

Conclusion: More than 45.91% eyes of patients had a significant and stable improvement of visual outcome,OCT Macular thickness,volume measurement, and decreased fluorescein leakage area who underwent both Conventional and modified Focal Macular Laser. Those patients had a chronic Vascular Maculopathy and their visual acuity didn't improve by many different types of Intravitreal injections of ANTIVEGF drugs . More than 84% of eyes had stable visual outcome.

FP-RET-060

Vitreous contamination due to injection of cellular content of ocular tissues cut by the needle tip during intravitreal injections

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Purpose: to study the cellular content of needle tip aspirates during standard IVI using different types of needles, as possible way of vitreous contamination.

Methods: IVIs were performed on eyes of 30 Wistar white outbred albino rats (age: 6 months, weight: ≈700 g) and on human cadaver eyes. For IVIs, a hypodermic 27 gauge (G) and 30 G needles, and a spinal anesthesia Pencan 27 G needles (10 IVIs pro one needle type) were used. During IVI, after the needle penetrated ocular wall, instead injection, an aspiration of vitreous was performed. Then cellular content from the needle tip was studied using quantitative morphological analysis, cell cultivation analysis, and cyto-histological analysis of aspirates and entry sites. The results underwent statistical analysis ($p < 0.05$ considered statistically significant).

Results: Cellular content was found in aspirates from all types of needle showing following morphological cell types: conjunctival, ciliary body non-pigmented epithelial- and sclerocyte-like cells and granular proteins (cellular damage marker). A higher amount of granulated proteins was found in aspirates from 27G hypodermic needles (rat and cadaver eyes study) compared to 30G hypodermic and 27G Pencan needles ($p < 0.05$). Entry sites after IVI with hypodermic needles showed bigger trauma in all layers of the eye wall (rat and cadaver eyes study), in comparison to 27G Pencan needle. Cultivation of aspirates in medium (cadaver eye study, 4 weeks period) showed adherent or gravitationally immobile proliferated conjunctival cells.

Conclusions: Contamination of the vitreous after IVI can occur due to injection of cellular content cut by sharp inner edge of the tip of hypodermic needle that are used routinely for IVI. Smaller trauma of ocular tissues was caused using 30 G needle. Modification of needle tip design in order to avoid possible consequences of cellular content being injected into the vitreous cavity has to be considered.

FREE PAPER PRESENTATIONS FP07: Cornea, Ocular Surface

FP-COR-061

The rising tide of acanthamoeba keratitis in Auckland, New Zealand: a 7-year review of presentation, diagnosis and outcomes (2009-2016)

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Purpose: To assess the incidence, clinical presentation, diagnosis and outcomes of patients with Acanthamoeba keratitis (AK) in Auckland, New Zealand over a 7-year period.

Method: All cases of AK presenting to the Auckland District Health Board Ophthalmology Service were identified using a cross-referenced search of clinical, laboratory and pharmacy records from March 2009 to May 2016. Demographic and clinical data were collected including age, gender, risk factors, clinical manifestations, initial diagnosis, diagnostic investigations, treatment, presenting and final visual acuity and surgical interventions.

Results: Fifty-eight eyes of 52 patients were diagnosed with AK. Contact lens (CL) use was noted in 96% of unilateral and 100% of bilateral cases. The mean duration of symptoms at presentation was 21 days and the mean duration from presentation to definitive diagnosis was 14 days. Initial diagnosis was recorded as CL-related keratitis in 70.6%, viral keratitis in 15.5% and AK in 12.0%. The diagnosis was confirmed with In vivo confocal microscopy (IVCM) in 67.2%, corneal scrape in 22.4%, corneal biopsy in 1.7% and clinically in 8.6%. IVCM sensitivity was 83.0%. Surgical intervention was required in 4 patients, all with delayed diagnosis (range 63-125 days). The incidence of AK has more than doubled when compared with the preceding 7-year period.

Conclusion: AK is a rare vision-threatening protozoal infection with rapidly-increasing incidence in New Zealand, predominantly affecting CL users. Diagnosis is often challenging and when delayed is associated with worse outcomes. IVCM offers rapid diagnosis with high sensitivity.

FP-COR-062

Healing of persistent epithelial defects or corneal ulcer by recombinant human nerve growth factor eye drops in patients with stage 2 or 3 neurotrophic keratitis

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Purpose: To combine results from randomised, double-masked, vehicle-controlled trials to summarise the treatment effect of recombinant human nerve growth factor (rhNGF) eye drops vs vehicle in patients with stage 2 or 3 neurotrophic keratitis (NK).

Method: To date, two studies have assessed rhNGF efficacy in NK patients. NGF0212/REPARO (NCT01756456), a Phase I/II study, randomised 156 patients 1:1:1 to rhNGF 10 µg/mL, rhNGF 20 µg/mL, or vehicle (6 drops/day

for 8 weeks) in the Phase II segment. NGF0214 (NCT02227147), a Phase II study, randomised 48 patients 1:1 to rhNGF 20 µg/mL (modified formulation containing antioxidant) or vehicle, 6 drops/day for 8 weeks. We conducted a fixed-effects meta-analysis using the Mantel-Haenszel (M-H) method to yield a pooled odds ratio (OR) for rhNGF 20 µg/mL vs vehicle. Efficacy (corneal healing, yes/no) was assessed by two different measures: < 0.5 mm maximum diameter of staining in the corneal lesion (persistent epithelial defect or ulcer) and complete absence of staining (0 mm in the lesion area; no persistent staining elsewhere).

Results: For corneal healing assessed as <0.5 mm staining, the M-H OR was 3.986 (95% confidence interval [CI] 1.982-8.018, $p < 0.001$ for test of OR=1) at week 4, and 4.236 (95% CI 2.111-8.500; $p < 0.001$) at week 8. For healing assessed as complete absence of staining, OR was 7.101 (95% CI 3.278-15.383; $p < 0.001$) at week 4, and 6.092 (95% CI 2.969-12.499; $p < 0.001$) at week 8. I-squared (variation of OR attributable to heterogeneity) was 39.2% at week 4 and 0% at week 8 for healing assessed as <0.5 mm staining; and 0% at weeks 4 and 8 for complete absence of staining.

Conclusion: This meta-analysis supports the efficacy of rhNGF 20 µg/mL eye drops for inducing healing of stage 2/3 NK. Lack of heterogeneity in study outcomes suggests that added antioxidant does not influence efficacy.

FP-COR-063

Trends in microbiological features and risk factors in infectious keratitis: 10-year experience

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Purpose: To evaluate the spectrum, antibiotic susceptibility and risk factors of infectious keratitis in a 10-year period at a major tertiary referral hospital.

Methods: In this retrospective observational case series, all cultured infectious keratitis cases from January 1, 2005, through December 31, 2015, were evaluated. Microbiology and medical records were reviewed retrospectively. Microbial isolates, antibiotic susceptibility and risk factors were analysed.

Results: A total of one hundred forty-four consecutive positive corneal scrapings were analysed. Bacterial keratitis accounted for 139 of all cases (97%) and fungi for 5 cases (3%). Gram-negative pathogens were found to be the most common (60%), with an increasing trend since 2011 ($p < 0,05$).

Pseudomonas aeruginosa was the most common gram-negative organism (40%). *Staphylococcus aureus* (*S. aureus*) was the most common gram-positive organism (19%). Meticillin-resistant *Staphylococcus aureus* (MRSA) was found in 5% of all cases, and it represented 36% of all *S. aureus* samples.

Gentamicin susceptibility for all tested pathogens was 73% and ciprofloxacin was 70%. The overall sensitivity for vancomycin of *S. aureus* was 90% and for MRSA was 100%. *P. aeruginosa* and *S. aureus* isolates were highly susceptible to ceftazidime, gentamicin and ciprofloxacin.

The main risk factors encountered were: contact lens wear (23%), ocular surface disease (14%), immunosuppression (12%), trauma (11%) and history of ocular surgery (9%). There was a positive correlation between contact lens wear and *Pseudomonas aeruginosa* ($p < 0,05$), odds ratio of 20,7, with a significant increasing trend over time ($p < 0,05$).

Conclusion: Fluoroquinolones were effective against the most common bacteria, supporting the increasing use of these as a first-line monotherapy for bacterial keratitis. *Pseudomonas aeruginosa* is the most common cause of microbial keratitis. Contact lens wear is an important predisposing factor with increasing frequency over the years

FP-COR-064

Lifitegrast ophthalmic solution 5.0% for treatment of dry eye disease: combined evidence from 5 randomized controlled trials

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Purpose: To evaluate the combined evidence from 5 clinical trials of lifitegrast ophthalmic solution 5.0% (LIF) in subjects with dry eye disease (DED). Lifitegrast is a lymphocyte function-associated antigen-1 (LFA-1) antagonist approved in the US for the treatment of signs and symptoms of DED.

Method: Adults with DED were randomized to LIF or placebo (PBO) in 5 randomized, double-masked, placebo-controlled trials: 4 12-week efficacy/safety studies (phase 2, LIF n=58, PBO n=58; phase 3 trials: OPUS-1, LIF n=293, PBO n=295; OPUS-2, LIF n=358, PBO n=360; OPUS-3, LIF n=355, PBO n=356), and a 1-year safety study (SONATA, LIF n=220, PBO n=111). Change from baseline to day 84 in DED signs and symptoms was evaluated across the 12-week studies. Key measures were inferior corneal staining score (ICSS; 0-4 scale), eye dryness score (EDS; visual analogue scale [VAS], 0-100 scale), and visual-related function subscale of a symptom scale (0-4 scale). Pooled safety data (LIF n=1287, PBO n=1177) from all 5 trials were also analyzed.

Results: LIF improved ICSS versus PBO in the phase 2 study (secondary endpoint; treatment effect 0.35, nominal $P=0.0209$), OPUS-1 (co-primary; 0.24, $P=0.0007$), and OPUS-3 (ad hoc; 0.17, nominal $P=0.0144$). LIF reduced EDS (VAS) versus PBO in OPUS-2 (co-primary; 12.61, $P < 0.0001$) and OPUS-3 (primary; 7.16, $P=0.0007$). The OPUS-1 co-primary symptom endpoint of visual-related function subscale, and the OPUS-2 co-primary sign endpoint of ICSS, did not achieve statistical significance. In the pooled safety analysis, total exposure was 415.65 person-years for LIF, and 332.15 person-years for PBO. Adverse events were mostly mild or moderate in severity. There were no serious ocular treatment-emergent adverse events (TEAEs) and withdrawals due to TEAEs were infrequent (LIF, 7.0%; PBO, 2.6%).

Conclusion: LIF improved signs and symptoms of DED in adults with DED and appeared to be well tolerated with no serious ocular TEAEs reported.

FP-COR-065

Safety and efficacy of frozen corneas for emergency corneal transplantation and glaucoma surgery

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Purpose: To examine the use of frozen corneas for tectonic grafts to (i) maximise the use of all banked corneal tissue, (ii) to provide immediately accessible tissue for urgent requests (iii) to conserve optical grade tissue for patients requiring visual outcome and (iv) to fulfil the donor family's wish that the tissue be utilized for transplant purposes in the first instance.

Method: This was a retrospective study of surgical procedures using frozen corneas from the Lions Eye Bank of Western Australia from 2012 to 2016. Corneas cleared for use following serological and microbiological testing but of insufficient quality for standard transplant use were stored at -20°C in or-

gan culture medium supplemented with antibiotics, antifungals and dextran. Tissue was thawed on the day of surgery. Surgeons completed a questionnaire and patient records were reviewed for clinical and surgical outcomes.

Results: Nineteen corneas were used for indications including corneal or scleral perforation and infection, and three for glaucoma surgery. Surgeon feedback indicated that the frozen tissue, once thawed, handled surgically the same as fresh tissue and was suitable for its intended use. There were no problems related to the tissue itself. The frozen corneal tissue was suitable for use in glaucoma tube implants and was considered potentially better than sclera.

Conclusion: The use of frozen corneas for emergency corneal transplants is a viable option for maximum usage of eye bank stored corneas of all quality. Frozen corneas are a potential alternative to sclera for glaucoma surgery.

FP-COR-066

Clinical outcomes of Descemet's stripping automated endothelial keratoplasty in long standing cases with corneal edema

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Purpose: To evaluate the refractive and anatomical outcomes of Descemet's Stripping Automated Endothelial Keratoplasty (DSAEK) in patients with corneal edema

Method: Patients with prolonged edema who underwent DSAEK surgery are included in this prospective study. Donor age, death to preservation time, corneal storage time and endothelial cell density are recorded. Patients are evaluated for, best-corrected visual acuity (BCVA), central corneal thickness (CCT), endothelial cell density, corneal topography and anterior segment OCT findings

Results: DSAEK surgery was performed in thirteen consecutive eyes of twelve patients. The mean patient age was 62.2 ± 18.7 (12-78) years. Five eyes (38.4%) of 4 patients had pseudophakic bullous keratopathy, 5 eyes (38.4%) of 5 patients had Fuchs endothelial dystrophy, 2 eyes (15.3%) of 2 patients had graft failure and 1 eye (7.6%) of 1 patient had congenital hereditary corneal dystrophy. The mean donor age was 59.5 ± 10.0 and the mean donor corneal endothelium cell density was 3433.2 ± 731.6 cells / mm². The mean BCVA was improved from 2.12 ± 0.84 logMAR to 0.49 ± 0.35 logMAR at final visit. The mean corneal endothelial cell density was 525.6 ± 164.4 cells / mm² preoperatively, 1431.9 ± 363.4 cells / mm² at the last follow-up. The mean CCT was 740.0 ± 98.7 μ at the first control and it was 654.5 ± 90.3 μ at the last control visit. The mean follow-time was 7.3 ± 3.1 months.

Conclusion: DSAEK surgery seems to be an effective and safe method in corneal endothelial failure. Superior visual rehabilitation and low complication rates can be obtained with DSAEK surgery. Prolonged edema or long-standing Fuchs dystrophy may lead to anterior stromal degenerative changes that can degrade final visual acuity

FP-COR-067

DSAEK in eyes with prior Ahmed glaucoma drainage device placement

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Purpose: Descemet stripping automated endothelial keratoplasty (DSAEK) is currently the preferred approach in the treatment of endothelial pathology such as Fuchs's dystrophy and pseudophakic bullous keratopathy. However, in eyes with glaucoma drainage devices and endothelial failure, this surgery can be technically more challenging. Our purpose is to evaluate the outcome of DSAEK in eyes with previous Ahmed Valve (AV) implantation, with a particular focus in graft detachment.

Method: Retrospective non-randomized study of patients which underwent DSAEK after AV implantation with the tube in the anterior chamber from January 2011 to June 2015 in a tertiary referral center. Clinical charts were analyzed and age, best corrected visual acuity (BCVA) and intraocular pressure (IOP) were recorded. Pre-and postoperative complications were also analyzed. All surgeries were video recorded.

Results: 10 eyes of 8 patients were included. BVCA improved in all patients. Mean IOP variation pre-DSAEK and after-DSAEK measurements was not statistically significant. All eyes had good attachment of the button to the recipient's stroma with no need for rebubbling. Secondary graft failure occurred twice in one eye.

Conclusion: Although DSAEK is technically more challenging, with possible endothelial cell damage and graft dislocations, a proper surgical technique and follow up may reduce these complications. Also, the quicker visual recovery with less astigmatism, more stable refraction, and reduced risk of wound dehiscence and rejection may make this a safe and successful technique.

FP-COR-068

Three years follow up of KeraKlear keratoprosthesis

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Purpose: To report 3 years follow up of KeraKlear keratoprosthesis implanted, assisted by FS laser, epidescemetic or intralamellar.

Method: This study is a prospective interventional consecutive clinical series of cases.

Patients were considered for implantation with the new keratoprosthesis model (KeraKlear) if they were at high risk of failure with standard PK, or showed conditions with a poor prognosis for corneal graft surgery of any type. We used FS laser to create the surgical planes adequate for the purpose of the Kpro implantation, 15 eyes were implanted with the KeraKlear keratoprosthesis either onto the deep stroma or over the Descemets membrane. The Kpro was implanted intralamellar in 11 eyes and epidescemetic in 4 eyes.

Main outcome measures were anatomical outcomes (slit lamp examination and anterior segment OCT) and visual outcomes.

Results: For the intralamellar technique; the anatomical outcome was excellent in 5 eyes out of 11, with no complications. The other 6 eyes developed complications such as deep corneal inflammatory membrane, totally vascularized cornea, extrusion of the Kpro and corneal melting, all of which were managed successfully. No eye was lost.

For the epidescemetic technique; the anatomical outcome was excellent in all the 4 eyes. Visual outcomes showed improvement in the visual function in 45% of the eyes.

Conclusion: The new KeraKlear Kpro when implanted epidescemetically, shows to be a viable, non-invasive alternative to corneal transplantation with potential advantages like decreased risk of endophthalmitis, and other severe complications like glaucoma or expulsive hemorrhage. The 3-year outcomes demonstrate that KeraKlear Kpro is better tolerated and less prone to complications when implanted epidescemetically. Anatomical and visual outcomes are good if adequate selection criteria are followed.

FP-COR-069

Why I prefer PDEK (Pre Descemets Endothelial Keratoplasty) advantages over DSEK / DMEK / PK

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Purpose: To evaluate the clinical outcomes of Pre Descemets Endothelial Keratoplasty (PDEK) in varied endothelial dysfunctions and to compare with conventional procedures of Penetrating Keratoplasty (PK), Descemets Membrane Endothelial Keratoplasty (DMEK) and Descemets Stripping Endothelial Keratoplasty (DSEK) in our practice.

Method: Prospective observational study of PDEK and QOL evaluation. Fuchs dystrophy, bullous keratopathies, failed corneal grafts, ICE and PEX syndromes, Post hydrops and post trab endothelial dysfunctions enrolled. With endothelial side up, 26 gauge needle attached to airfilled syringe, a pneumatic dissection of Pre Descemets layer created & stained. 7.5- 8mm PDEK graft excised, implanted through MIL injector, after DM stripping of recipient. Graft unrolled, attached with air & endoilluminator assistance

Results: 48 subjects enrolled. Mean followup was 6 months \pm 21 days. 39 subjects (81.25%) achieved postoperative vision 20/60 or better. (Mean improvement 1.065 ± 0.551 LogMAR, $p < 0.0001$). PDEK graft is possible in donor of any age against above 40 years with DMEK (Pneumatic separation is better than mechanical dissection). Endothelial preservation in PDEK with pneumatic dissection, (Mean difference in cell loss was 22.13%) was better than DMEK (manual dissection). Corneal thickness of PDEK (565.97 ± 44.79 mic.) and DMEK were closer to normal, against DSEK (618 mic.). Quality of Life in PDEK, a day care procedure had better pain and recovery scores than Penetrating keratoplasties (7-10 days in PDEK Vs 6-12 months in PK). No suture emergent adverse events with PDEK unlike PK.

Conclusion: Pneumatic dissection of PDEK graft was technically easier, better in endothelial preservation and could be done in donors of any age when compared to manual dissection of DMEK. Corneal thickness was closer to normal with PDEK than DSEK. PDEK was better than PK in pain, recovery, quality of vision and suture related events. PDEK is our preferred endothelial keratoplasty.

FP-COR-070

Glycerin application technique for improving DSAEK graft success

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Purpose: To describe a new technique and report the outcomes of a simple method of increasing donor graft adherence during Descemet's Stripping Automated Endothelial Keratoplasty (DSAEK).

Methods: Post-operative data on day one and week one examinations following DSAEK was reviewed. The adverse outcome of interest was lenticule graft detachment. Forty-one consecutive patients undergoing DSAEK by the

same experienced cornea surgeon were included in this study. Some of the DSAEK procedures included combined cataract surgery, either laser-assisted or manual.

All surgery cases included in the review were performed with a commonly used DSAEK technique: a limbal 5mm incision with graft pull-through via microforceps, traversing the anterior chamber and grasping the donor stroma. A novel application technique was designed for sterile, topical glycerin to be used throughout the eight minute air tamponade phase of the DSAEK procedure. Outcomes of 25 consecutive surgeries using the glycerin application technique were compared to the other 16 surgeries, which did not have glycerin applied.

Results: Graft adherence was significantly higher in the glycerin group (96%), compared to the non-glycerin control group (75%) ($p < .05$).

Conclusion: This case review suggests that a safe and simple technique of applying topical glycerin onto the cornea during the final phase of DSAEK may help deturgescence the cornea, which can help donor adherence and decrease early detachment.

FREE PAPER PRESENTATIONS

FP08: Glaucoma

FP-GLA-071

Late in-the-bag intraocular lens dislocation, high intraocular pressure and glaucoma: a randomised clinical trial comparing lens repositioning and lens exchange

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Purpose: To compare two operation methods for late in-the-bag IOL dislocation with focus on intraocular pressure (IOP) and the need for glaucoma treatment after surgery, and specifically to evaluate whether IOL dislocation surgery has an IOP-lowering effect.

Method: Late in-the-bag IOL dislocation has become more frequent in recent decades. In a prospective randomised parallel-group clinical trial conducted in our university clinic, 104 patients (eyes) with this condition were randomly assigned to IOL repositioning by scleral suturing (n=54) or IOL exchange with a retropupillary fixated iris-claw lens (n=50). One surgeon (L.D.) performed all the operations.

Patients were examined before and 6 months after surgery.

Results: Overall IOP was 18.0 ± 6.2 mmHg preoperatively and 15.7 ± 4.8 mmHg 6 months postoperatively ($P < 0.001$). IOP changed by -1.2 ± 5.8 mmHg after IOL repositioning ($P = 0.18$) and -3.8 ± 6.4 mmHg ($P < 0.001$) after IOL exchange (group difference: $P = 0.05$). Preoperatively, 62 patients (60%) had either known or suspected glaucoma. The glaucoma medication requirements in these 62 patients showed a non-significant increasing trend from the pre-operative to the postoperative examination in both the repositioning and the exchange group, and filtering surgery was performed in 2 and 1 patient, respectively.

Only 3 patients, all operated with IOL exchange, discontinued their glaucoma medication. Twenty-five patients (24%) had a particularly high IOP (≥ 30 mmHg) before surgery, which was not resolved by IOL dislocation surgery alone in any of these patients. Many study patients had underlying pseudexfoliation glaucoma.

Conclusion: An overall IOP decrease after IOL dislocation surgery was observed, and the decrease seemed to be more favourable after IOL exchange. However, associated high IOP was in most cases not resolved by dislocation surgery alone, and in this study late in-the-bag IOL dislocation was commonly associated with pseudoexfoliation glaucoma.

FP-GLA-072

Anterior chamber paracentesis as a method of urgent care of acute angle-closure glaucoma

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Classic treatment of acute angle-closure glaucoma includes usement of dehydrating agents, both topical and general, and performance of laser peripheral iridotomy. Although this therapy helps to normalize intraocular pressure (IOP) during 24 hours almost in 90% of patients, frequency of success in the first 3 hours is near 21%, after 6 hours - 44%, and in 12 hours - 76% (Lam DS, 2007, Ramli N, 2010; Boey PY, 2012).

Purpose: To study the efficiency and safety of the anterior chamber paracentesis in emergency care of acute angle-closure glaucoma.

Methods: The study included 13 patients with their first acute attack of glaucoma, high IOP (41 mmHg and higher) and general complaints (severe pain the eye and the relevant part of the head, dizziness, nausea, vomiting, high blood pressure - 180-220/ 100-140 mmHg). All patients underwent anterior chamber paracentesis with 20G knife (Mani, Japan) under topical anesthesia. Additionally, they received pilocarpine 1% and 0.5% Timolol 4 times a day and oral acetazolamide. We evaluated the IOP before treatment, 30 minutes, 2 and 12 hours thereafter.

Results: The mean IOP was reduced from 55.6 ± 9.2 mmHg to 15.4 ± 3.1 mmHg immediately after paracentesis, and then to 16.3 ± 2.2 mmHg at 30 minutes, 19.1 ± 6.6 mmHg at 2 hour, and 18.4 ± 7.3 mmHg at 12 hours after paracentesis. Also we noted dramatic increase transparency of the cornea that was sufficient to perform laser peripheral iridotomy. All patients noted disappearance of pain, dizziness, nausea and decreasing blood pressure to 120-150/70-90 mmHg within 2-3 minutes after paracentesis. We haven't seen any complications during the procedure or in the postoperative period.

Conclusion: Anterior chamber paracentesis in patients with acute angle-closure glaucoma is safe and highly effective, and allows not only to quickly normalize intraocular pressure, but also to improve the general condition of the patient.

FP-GLA-073

The results of diode laser cyclophotocoagulation in pediatric patients with glaucoma

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Purpose: To evaluate the results of transscleral diode laser cyclophotocoagulation in pediatric patients with glaucoma.

Method: Medical records of the pediatric patients (age < 18 years) who underwent transscleral diode laser cyclophotocoagulation between January 2006 and January 2016 were reviewed retrospectively. Eyes with follow-up shorter than 6 months were excluded. Patients' age, gender, glaucoma diagnosis, visual acuity level, intraocular pressure (IOP) and antiglaucomatous medications were recorded. Success was defined as a final intraocular pressure (IOP) between 7 and 21 mmHg.

Results: Fifty-three eyes of 44 patients (28 boys, 16 girls) were included in the study. Mean age was 89.8 ± 59.9 months (range, 4 - 204 months), mean follow-up time was 38.9 ± 27.4 months (range 6-120 months). Glaucoma diagnosis was aphakic glaucoma in 24 eyes (45.3%), congenital glaucoma in 20 eyes (37.7%), Sturge-Weber syndrome in 3 eyes (5.7%), posttraumatic glaucoma in 3 eyes (5.7%), silicone oil induced glaucoma in one eye (1.9%), uveitic glaucoma in one eye (1.9%) and Axenfeld-Rieger syndrome in one eye (1.9%). Before laser treatment mean IOP was 29.5 ± 5.8 mmHg (range, 23-55 mmHg). It was found as 17.5 ± 6.2 mmHg (range, 5-35 mmHg) at last follow-up visit. Decrease in IOP level was statistically significant ($p < 0.001$). Mean topical antiglaucomatous medication was 2.9 ± 1.2 before laser treatment and it was found as 3.0 ± 1.0 at final visit. There was no statistically significant difference between the number of topical medications before and after laser treatment ($p = 0.796$). At the last follow-up visit success was achieved in 39 eyes (73.6%). As a postoperative complication fibrinoid anterior chamber reaction was developed in 3 eyes and persistent epithelial defect was developed in 2 eyes.

Conclusion: Transscleral diode laser cyclophotocoagulation is an effective and safe procedure in refractory glaucoma in pediatric eyes.

FP-GLA-074

Goniofenestration after deep sclerectomy. When does time run out?

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Purpose: To investigate how long after performing a deep sclerectomy goniofenestration may be effective.

Method: Thirty consecutive patients coming for control after deep sclerectomy and showing elevated pressure underwent YAG-Laser goniofenestration. The pressure before and after the procedure was compared, the time elapsed between surgery and YAG laser treatment recorded.

Results: Mean pressure before treatment was 28,40 mmHg GAT (SD \pm 4,7 mmHg) and dropped to 7,8 mmHg GAT (SD \pm 7,0 mmHg). Time between surgery and GF varied from 1 day to 7 years. There was no visible relation between effect of GF and time elapsed.

Conclusion: YAG laser goniofenestration is a very efficient way to optimize rising pressure after deep sclerectomy. It should be attempted even years after surgery has been performed and should be given clear priority to any other therapeutical approach. Any reintroduction of topical therapy should be postponed until YAG laser surgery has been performed.

FP-GLA-075

Minimally invasive surgery for glaucoma: preliminary results using the GATT technique (gonioscopy assisted transluminal trabeculotomy)

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Purpose: Reporting the preliminary results of the efficacy and safety of a new minimally invasive surgical technique: GATT.

Participants: 53 eyes of 49 consecutive patients with primary open angle glaucoma or secondary glaucoma with IOP > 21 mmHg on maximum tolerated glaucoma therapy, underwent ab interno 360° trabeculotomy using the GATT technique.

Method: Prospective analysis of 53 consecutive surgical procedures.

Main outcomes measures: IOP, hypotonic treatment, visual acuity and post-operative complications.

Results: The operated patients were aged between 53 and 86 years with a mean of 74.2 years. Preoperative: The Mean IOP was 25.46 (SD \pm 3.21 mmHg) and Drops 3.44 \pm 0.5

- At 3 months follow-up (46 patients) the mean IOP was 13.32 mmHg (SD \pm 3.08) (IOP reduction of 47.89%) and Drops 0.28 \pm 0.6
- At 6 months follow-up (37 patients) the mean IOP was 14.37 mmHg (SD \pm 3.07) (IOP reduction of 44.1%) and Drops 0.32 \pm 0.7
- A 9-month follow-up (25 patients) the mean IOP was 15.28 mmHg (SD \pm 3.21) (IOP reduction of 42.5%) and Drops 0.4 \pm 0.7
- At 12 months of follow up (19 patients) the mean IOP was 15.73 mmHg (SD \pm 3.36) (IOP reduction 34.5%) and Drops 0.52 \pm 0.8

All patients had mild to moderate transient postoperative hyphema with complete resolution to 7 days. One patient required vitrectomy due to vitreous hemorrhage. None of the patients developed postoperative ocular hypotony (IOP <6 mmHg). Four patients (7.5%) required filtration surgery for raised IOP despite treatment.

Conclusion: Preliminary results indicate that GATT is effective on significantly lowering the IOP and reducing the number of glaucoma medications over the time covered by this study. Postoperative complications are rare. In case of failure, GATT does not preclude the possibility of performing filtration surgery. The GATT may be considered a surgical option for the surgical treatment of patients with open angle glaucoma before considering conventional filtration surgery.

FP-GLA-076

Effectiveness of new combined operation technique in open-angle glaucoma patients. Four years of follow up

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Purpose: Open-angle glaucoma is the common cause of irreversible blindness worldwide. Usually combined cataract and glaucoma surgery is necessary procedure in case of cataract progression and uncompensated glaucoma. It is necessary to perform so operation that allows to reach glaucoma stabilization and IOP compensation without additive drops on the long period. Besides this kind of operation has to be safe. The aim of our work is to assess long-term effectiveness of new combined cataract and glaucoma technique in open-angle glaucoma patients - Phaco-Emulsification with modified tunnel trabeculopuncture. **Method:** Operation technique: We perform classic deep non penetrated sclerectomy and cataract phaco-emulsification, then we perforate internal wall of schlemm's channel laterally of filtration zone of deep sclerectomy. Then in to the space of schlemm's channel we implant rests of capsular bag, which we get after anterior capsulorhexis. So capsular bag is as a kind of the tube - one end is at the anterior chamber of eye and another is at the intrascleral space. In 2016 we examined 413 patients (434 eyes), which were operated in 2012. We examined IOP, visual field and thickness of optic nerve fibers.

Results: There were no one blind patients in this group. Stability of visual function without any hypotensive drops was in 386 cases (89%), additive hypotensive drops (pilocarpine 1%) are necessary in 37 cases (8,5%). In 11 cases (2,5%) during four years after operation we observed IOP increase and deterioration of visual functions. It was the reason of repeated glaucoma operation (sinustrabeculectomy).

Conclusion: Combined operation technique Phaco-emulsification with modified tunnel trabeculopuncture is an effective method of treatment of the open-angle glaucoma patients. In four years it allows to reach of the effective IOP decrease and to keep stability of visual functions in 97,5% cases. In 89% cases patients don't need any hypotensive drops.

FP-GLA-077

Inflammatory proteasome in open angle glaucoma and diabetes

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Purpose: test the inflammatory cytokines in POAG in the presence of a systemic risk factor such as diabetes

Method: quantification of 21 pro-inflammatory cytokines in aqueous and compare levels between diabetes, POAG and POAG+diabetes patients. Controls were recruited from eyes without glaucoma or diabetes, undergoing conventional cataract surgery.

Results: 87 aqueous samples were collected in our study; cytokines were analyzed with Human Cytokine Premixed Kit (Luminex®), distributed in 4 groups. CXCL5, CXCL8, IL-1 α , IL-2 and TNF α were found significantly higher in the combined pathology group (glaucoma and diabetes, $p < 0.05$), whereas for molecules like FGF basic, G-CSF, GM-CSF, IL-1Ra diabetes did not influence the levels between POAG groups. Both groups of cytokines (differential/ non-differential) trigger the TNF α stimulation, through direct or indirect pathways. Multivariate analysis validated a good level of prediction for CXCL5, CXCL8, IL-1 α , IL-2 over TNF α in glaucoma patients (R square=0.842, $p=0.000$) and glaucoma+diabetes patients (R square=0.618, $p=0.034$). Since the level of prediction in glaucoma+diabetes patients was lower compared to POAG, another model included parameters like VEGF, GM-CSF, G-CSF and TNF α (based on a heat map analysis and significant correlations within the group and also between groups). Second model offered a better prediction compared to the first one in the combined pathology (R square=0.758, $p=0.018$).

Conclusion: diabetes changed the inflammatory composition of aqueous in glaucoma patients, compared to non-diabetic patients, therefore the evolution of POAG might be different in cases of combined pathologies. Further studies are necessary for a proper validation of this theory based on fundamental sciences and cross-sectional study design.

FP-GLA-078

Contrast sensitivity abnormalities in deaf boys

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Purpose: To investigate of contrast sensitivity abnormalities frequency in deaf boys in Tehran, Iran.

Method: In this cross sectional study contrast sensitivity of boys of 15 to 20 years old with hearing disability were evaluated in high schools of Tehran, Iran. Sixty four eyes were tested for contrast sensitivity and refractive error. They all have intelligence quotient (IQ) more than 70. We investigated their contrast sensitivity by using Vector vision CVS-1000 in 4 different spatial frequencies.

Results: The results demonstrated that profound hearing loss was noted in 50% of them. Frequency of Contrast sensitivity abnormalities in 4 different spatial frequencies was from 51.6% to 65.6%. The largest abnormalities was at 18cycles per degree. Only 12.5% of deaf students had best corrected visual acuity less than 10/10. All kinds of abnormality in contrast sensitivity were not associated with the type and severity of hearing loss.

Conclusion: The larger frequency of contrast sensitivity abnormalities in high spatial frequencies than the other frequencies may demonstrate more defects in the center of visual system comparing with its periphery in individual with hearing loss. We concluded that a deaf boy is at greater risk of contrast sensitivity abnormalities than hearing boys.

FP-GLA-079

Autoimmunity and glaucoma: intravitreal injection of alpha synuclein antibodies as therapeutic approach in a glaucoma animal model

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Purpose: Glaucoma is a neurodegenerative disease including apoptosis of retinal ganglion cells (RGC) and axons. Altered serum autoantibody (Aab) levels occur in glaucoma patients. Beyond others, antibodies (Ab) to α -synuclein have been identified. Aim of the study is to unravel the mode of action of α -synuclein Ab.

Methods: Intraocular pressure (IOP) was elevated in Sprague Dawley rats (n=14) by episcleral vein occlusion. Intravitreal injection (IVI) was performed after IOP rise.

Fellow eyes served as (1) normotensive controls (n=14) and were compared with IOP elevated eyes of (2) controls (n=3, no IVI), (3) buffer (n=6, IVI of buffer), (4) α -synuclein Ab (n=5, IVI of 25 μ g α -synuclein antibody).

Optic nerves and retinae were collected for PPD- and Brn3a staining. Retinal tissue was used for ESI-MS/MS analysis.

Results: Episcleral vein occlusion increased IOP significantly to 17.8 \pm 1.1 mmHg compared to fellow eyes with 11.3 \pm 0.4 mmHg (p< 0.01).

Axon density/mm² showed a decay to 322477 \pm 37055 (p< 0.01) in controls, 307787 \pm 28399 (p< 0.01) in buffer group, and 399818 \pm 16529 (p=0.19) in the α -synuclein Ab group compared to fellow eyes with 439529 \pm 18161 axons/mm². The RGC density/mm² was reduced to 1076 \pm 132 (p< 0.05) in controls, 1068 \pm 163 (p< 0.01) in buffer group and 1252 \pm 95 (p=0.08) in α -synuclein Ab group compared to fellow eyes with 1516 \pm 186 RGC/mm². Mass spectrometric analysis revealed upregulated levels of peripherin-2 (240x) and cofilin-1 (350x) in α -synuclein Ab group.

Conclusion: Decreased neurodegeneration was found in α -synuclein Ab group. Peripherin-2, an intermediate filament and cofilin-1, an actin-binding protein reorganizing actin filaments, are upregulated. This indicates a cytoskeletal reorganisation, leading to an improved neuronal survival.

FP-GLA-080

Aqueous humor dynamics of netarsudil ophthalmic solution in humans

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Purpose: Netarsudil mesylate (previously AR-13324) is a novel Rho kinase and norepinephrine transporter inhibitor that lowers intraocular pressure (IOP) in normal subjects as well as ocular hypertensive and glaucoma patients. In this study, we determined the effect of netarsudil ophthalmic solution on aqueous humor dynamics (AHD) in healthy human volunteers.

Methods: This was a double-masked, vehicle-controlled, paired-comparison study. Healthy volunteers were randomized to receive netarsudil 0.02% in one eye and its vehicle in the contralateral eye, once daily in the morning for 7 days. Outflow facility was measured by digital Schiötz tonography. Episcleral venous pressure (EVP) was measured by using an objective, computer-controlled venomanometer and image analysis software. Aqueous humor flow rate was measured by anterior segment fluorophotometry. AHD variables measured at 1 week were compared to baseline measurements by using two-sample t-tests with statistical significance assumed for P < 0.05.

Results: Ten subjects (mean age 39 \pm 14 yrs) completed the study. Mean IOP in the netarsudil-treated eyes decreased from 17.0 \pm 2.5 to 12.4 \pm 2.2 mmHg (mean \pm SD, p< 0.0001), a decrease of 4.6 mmHg, compared to a decrease of 0.7 mmHg in the vehicle-treated eyes. In Netarsudil-treated eyes outflow facility increased from 0.27 \pm 0.10 to 0.33 \pm 0.11 μ L/min/mmHg (19% increase, p = 0.02) and EVP decreased from 7.9 \pm 1.2 to 7.2 \pm 1.8 mmHg (9% decrease, p = 0.01). Aqueous humor flow rate and uveoscleral flow rate did not change (p>0.05). In the vehicle treated eyes, there was no change in any AHD variable. Consistent with previous reports, subjects reported conjunctival hyperemia.

Conclusion: Netarsudil mesylate ophthalmic solution 0.02% lowers IOP relative to baseline by increasing outflow facility and decreasing episcleral venous pressure. This combination of mechanisms has not previously been demonstrated with commonly used glaucoma medications in humans.

FREE PAPER PRESENTATIONS

FP09: External Eye, Ocular Surface, Uveitis

FP-OCS-081

Utility of tear osmolarity measurement in diagnosis of dry eye disease

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Purpose: To assess the utility of TearLab® Osmolarity System in diagnosing dry eye disease (DED) in the Norwegian dry eye clinic.

Methods: A total of 1186 eyes from 593 patients (age: 51.3 \pm 17.6) with clinical diagnosis of DED with different etiologies were included. Inclusion criteria were presence of clinically diagnosed DED of different severity levels (level I-IV) according to the classification recommended by the Dry Eye Workshop 2007. All patients underwent a comprehensive dry eye work-up. Right (OD) and left eyes (OS) were analyzed separately. Tear osmolarity levels were compared between DESL groups. Due to a low number of patients in DESL IV group, DESL III and IV were merged together. Mann Whitney U test was used to compare tear osmolarity levels in the DESL groups. Intraclass correlation between OD and OS was performed.

Results: The analyses revealed that OD DESL I group had lower osmolarity levels (306.1 \pm 9.1) compared to OD DESL II (313.9 \pm 15.3, p<0.001) and OD DESL III-IV (316.5 \pm 21.4, p=0.000) groups.

Interestingly, OS DESL II had the highest levels (309.4 \pm 15.9) compared to OS DESL I (304.2 \pm 10.8, p=0.02) and OS DESL III-IV (308.5 \pm 15, p=0.05) groups.

The intraclass correlation analyses demonstrated very high correlation in clinical parameters of DED between OD and OS; tear film break-up time (r=0.92, p<0.001), Schirmer I test (r=0.86, p<0.001), ocular surface staining (r=0.81,

$p < 0.001$), meibum expressibility ($r = 0.92$, $p < 0.001$), meibum quality ($r = 0.88$, $p < 0.001$) and DESL ($r = 0.93$, $p < 0.001$). However, tear osmolarity levels was moderately correlated ($r = 0.534$, $p < 0.001$) between OD and OS.

Conclusion: The study demonstrated that consistency of tear osmolarity levels were not consistent as clinically diagnosed dry eye severity level increased. Unlike other clinical tests of DED tear osmolarity showed moderate correlation between the right and left eyes. Thus, TearLab® Osmolarity System should be used along with other clinical tests in diagnosis of DED.

FP-OCS-082

Effects of a sea buckthorn oil spray emulsion on dry eye

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Purpose: Effects of an eyelid spray emulsion containing sea buckthorn oil (0.4%) and hyaluronic acid (0.02%) (SB spray) on dry eye were investigated.

Method: An open randomized controlled study was carried out with adults (25-70 years) experiencing symptoms of dry eye (Ocular Surface Disease Index, OSDI ≥ 20 and moderate or severe dryness/burning/grittiness of eyes).

Part 1: (n=2): SB spray was administered on closed eyelids 4 times during one day.

Part 2: (n=10): SB spray was used on one eyelid, and a reference spray (commercial product with soy lecithin) on the other, in a randomized manner, 4 times/day for 9 days.

Part 3: (n=40): One randomized eyelid was treated with SB spray 4 times/day for 1.5 months; control eye was left untreated. Clinical dry eye tests and evaluation of signs of irritation were performed at the beginning, during (parts 1 and 2), and end of the study. Symptoms were recorded in questionnaires and daily logbooks.

Results:

Part 1: SB spray was well tolerated.

Part 2: Symptoms in both eyes were reduced from baseline (median OSDI: SB spray 43.2; reference 43.2) to the end (SB spray 6.8; reference 12.5). The lowering of OSDI was significantly greater by SB spray compared to the reference ($P = 0.0223$).

Part 3: Symptoms at baseline were similar in both eyes (median OSDI: 38.6) and attenuated to the end (SB spray 13.6; control 20.8). The lowering of OSDI was significantly greater in the eye with SB spray compared to control ($P = 0.0007$). The sum of symptom scores and frequency of days with dryness and watering of eyes was lower with SB spray compared to control ($P < 0.05$). No significant adverse effects with SB spray were observed in any part of the study.

Conclusion: Sea buckthorn oil emulsion sprayed on closed eyelids relieves the symptoms of dry eye and is well tolerated.

FP-OCS-083

Pooling of two randomized Phase III clinical trials of ciclosporin 1 mg/mL cationic emulsion (CsA CE) as a treatment for severe keratitis in patients with dry eye disease (DED)

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Purpose: Severe keratitis in DED increases the risk of ocular surface damage, vision loss and impaired quality of life. Preclinical and clinical testing of once-daily CsA CE showed a positive benefit-risk ratio in the treatment of severe keratitis in patients with DED. This analysis aimed to elucidate the magnitude of the treatment effect of CsA CE over vehicle (V) in patients with DED, as well as subpopulations of patients with severe keratitis and patients with Sjögren's syndrome.

Methods: Pooled efficacy data from the SANSIKA and SICCANOVE Phase III trials in patients with moderate-severe DED (MSDED) were analysed. Efficacy of CsA CE on signs and symptoms of DED was evaluated by composite responder endpoint (corneal fluorescein staining-ocular surface disease index [CFS-OSDI] at Month 6; response = improvement of ≥ 2 grades in CFS and $\geq 30\%$ in OSDI).

Responder rates were analysed by logistic regression in four populations: combined full analysis set (FAS), n=734 patients with MSDED; severe FAS, n=319 patients with CFS grade 4 (modified Oxford scale) and OSDI ≥ 23 ; Sjögren's FAS (n=269); Sjögren's and severe FAS (n=130).

Results: Responder rate was greater with CsA CE compared with V, with a statistically significant difference in both the FAS (21.6% vs 13.1%, $p = 0.015$) and severe FAS (29.5% vs 18.3%, $p = 0.038$). The responder rate in Sjögren's severe FAS at baseline was significantly higher with CsA CE compared with V (23.4% vs 9.4%, $p = 0.030$), reflecting a three-times-greater probability of response (odds ratio 3.04 [1.13; 9.5]). Difference in responder rate was not statistically significant in the Sjögren's FAS (19.2% vs 11.6%, $p = 0.109$).

Conclusion: CsA CE demonstrates a significant benefit over V in improving signs and symptoms in patients with MSDED. Results were more pronounced in patients with severe keratitis. This result was also shown in patients with Sjögren's syndrome and severe keratitis.

FP-OCS-084

A comparison of comorbidities among patients with and without dry eye disease in a large US healthcare system

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Purpose: Associations of dry eye disease (DED) with age and autoimmune diseases are known (DEWS. *Ocul Surf.* 2007;5:93-107), but a broad evaluation of associated comorbidities is needed. We examined rates of comorbidities in a large population with or without DED to identify additional relationships with comorbid conditions.

Methods: The US Department of Defense Military Health System covers 9.7 million beneficiaries. We identified beneficiaries with DED in that database using diagnostic and procedural codes and prescriptions for ophthalmic cyclosporine, and we matched a control group of beneficiaries without DED (non-DED) on the basis of age, sex, policy holder status, and region. Non-ocular and ocular comorbidities during the study period (1 year following January 1, 2014) were identified and statistically compared using McNemar's test.

Results: The DED and non-DED groups each had 285,666 beneficiaries, a mean age of 67.0±15.0 y (median 70 y), and 68.2% were female. The most common non-ocular comorbidities in the DED group were hypertension (62.5% vs non-DED 45.7%), thyroid disease (24.7% vs non-DED 15.5%), type 2 diabetes (24.1% vs non-DED 17.7%), sleep apnea (18.9% vs non-DED 10.3%), and depression (14.6% vs non-DED 9.2%; all $P < 0.001$). These conditions were observed 1.4-1.8 fold more in the DED than in the non-DED group. The most prevalent ocular conditions in the DED group were cataracts (35.1% vs non-DED 16.2%), glaucoma (20.2% vs non-DED 7.6%), and eyelid disorders (14.1% vs non-DED 2.9%; all $P < 0.001$). These ocular conditions were observed 2.2-4.9 fold more in the DED than in the non-DED group.

Conclusion: These data characterize the burden of comorbidities among people with DED relative to people without DED. An enhanced understanding of how often DED occurs in association with other conditions, including common age- and non-age-related diseases, may facilitate improved treatment strategies when caring for patients with DED.

FP-OCS-085

Intense ultra-regulated pulsed light in the treatment of meibomian gland dysfunction

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Purpose: The aim of his study is to validate the safety and efficacy of intense ultra-regulated pulsed light (IURPL) in patients with Meibomian Gland Dysfunction (MGD)

Method: This is a prospective and open label study. 184 eyes of 92 MGD patients were recruited and received 4 consecutive IURPL treatments (Thermaeye ©) on day 1, 7, 21, and day 45, with a follow up of 6 months. Symptoms were evaluated with OSDI score. Best corrected visual acuity, IOP,

conjunctival injection, upper and lower tear meniscus height, TBUT, corneal staining, lidmargin and meibomian gland assessments, and meibography were also recorded

Results: Significant improvements were observed in single and total ocular surface symptom scores, TBUT, and conjunctival injection at all the visits after the initial IURPL treatment ($P < 0.03$). Compared to baseline, the signs of eyelid margin, meibomian gland secretion quality, and expressibility were significantly improved at every visit during 6 months after treatments. There was no regional and systemic threat observed in any patient

Conclusion: Intense ultra-regulated pulsed light (IURPL) therapy appear as a safe and efficient treatment in relieving symptoms and signs of MGD eyes. Further studies are needed to confirm these results

FP-EXT-086

How should we treat ocular MRSA? review of antibiotic sensitivity and current management practices

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Purpose: Methicillin resistant *Staphylococcus aureus* (MRSA) accounts for 39% of *Staphylococcus aureus* ocular infections. Topical chloramphenicol is widely available in Europe, yet is not used in the USA due to a controversial association with aplastic anaemia, despite undetectable serum levels, and population studies which do not indicate causation. We wished to determine ocular MRSA antibiotic sensitivity patterns and current management practices.

Methods: Retrospective review of 100 consecutive MRSA positive ocular swabs (03/02/13-28/11/15) was performed with antibiotic sensitivity patterns determined in all cases. Indications for ocular investigation and management were identified for the 62 cases originating from hospital care (38 originated from general practice).

Results: Indications for microbial testing were blepharoconjunctivitis (86%; 53/62), MRSA screening (8%), and infective keratitis (5%). One oncology patient had MRSA cellulitis. 79% (49/62) were managed with topical chloramphenicol; variably prescribed 2-4 times per day (duration range 5 days to 4 weeks). Other topical agents used included fusidic acid, cefuroxime and gentamicin. There were no documented complications following chloramphenicol therapy. 27% (17/62) completed 5-day decolonisation treatment with chlorohexidine 4% once daily and mupirocin 2% three times per day.

All ocular MRSA organisms grown were shown to be sensitive to vancomycin, and only 1 case was shown to be resistant to chloramphenicol. 24% were resistant to fusidic acid.

3 cases remained MRSA positive following chloramphenicol treatment, but notably did not receive systemic decolonisation or an adequate daily dosage.

Conclusions: There were wide variations in management, a standardised management approach would address issues of cost and antibiotic resistance. Topical chloramphenicol should be the cheap, effective and safe first-line ocular treatment with eradication therapy, and vancomycin reserved for severe or resistant cases.

FP-EXT-087

The primary lacrimal point stenosis therapy using our own modified microsurgical method*Vegh M.^{1,2}, Facskó A.¹, Hári-Kovács A.¹**¹University of Szeged, Department of Ophthalmology, Szeged, Hungary, ²Semmelweis University, Department of Clinical Ophthalmology, Budapest, Hungary*

Purpose: Primary punctal stenosis is called those cases in which the functional position of the puncta unchanged. The essence of the disease is that, the tear can not drain from the palpebral fissure due to the narrowing of the opening of puncta. There are many methods for the therapy of the disease, but in many cases in many cases prove to be ineffective. Our own method was applied in the therapy to solve the problem in severe cases.

Method: In recent years, 24 lacrimal drainage systems of 17 patients were treated with primary stenosis, who previously had suffered from chronic blepharitis. As a first intervention dilatation of the punctum was performed both on the lower and upper. In ineffective cases "three snips" microsurgical method was used at the lower punctum. In the last two years new microsurgical methods were used: the lower lacrimal puncta with the vertically running canaliculus was removed from the eyelid margin and at the beginning of the horizontally running canaliculus triangular incision was made in the top of the wall, but leaving the mucosa intact.

Results: 8 lacrimal drainage systems were successfully managed and long-term results achieved (at least one year symptom free) by dilatation of the punctum. In one group of ineffective cases (6 lacrimal drainage systems) "three snips" microsurgical method was used at the lower punctum. This method result a long-term improvement in 3 cases, but in the other three cases, scarring was observed.

In the last two years, in 10 lacrimal drainage systems reconstruction was used our own microsurgical method. During the elapsed time after the surgery we found in two cases initial scarring and two cases were unsuccessful.

Conclusion: The simple cases of primary lacrimal punctal stenosis can be solved by probing, but in more severe cases, however, the microsurgical method can only be the good solution.

FP-UVE-088

OCT angiography in Behçet disease*Carreiro L., Lages V., Coelho J., Dias D., Macedo M., Furtado M.J.,**Lume M.**Centro Hospitalar e Universitário do Porto, Porto, Portugal*

Purpose: To evaluate the retinal microvasculature, in eyes of patients with Behçet disease, using optical coherence tomography angiography (OCTA), comparing four groups of patients: 1) patients without clinical evidence of ocular involvement; 2) and 3) patients with past history of anterior uveitis without and with macular edema, respectively and 4) patients with active panuveitis.

Methods: In this observational and descriptive study, OCTA images were acquired with SPECTRALIS®, Heidelberg. The flow imaging was based on full spectrum amplitude probabilistic algorithm, which assesses the vasculature in distinct layers of the retina. The layers assessed were the superficial retinal vascular plexus and deep retinal vascular plexus.

Results: The study included 15 eyes of 8 patients with diagnosis of Behçet's disease and 10 eyes of 5 control patients. The Behçet patient group included 4 women and 4 men, mean age 40 years [24-70]. Each of the 4 defined groups consists of 2 patients. No significant changes were observed in the retinal vasculature of Behçet patients in group 1 and 2. In opposition, both group 3

and group 4 patients showed distortion of the macular vascular network, with increase of the foveal avascular area and increase of focal macular avascular areas. Both vascular plexus of the retina appear to be affected, these changes being more evident in the deep vascular plexus.

Conclusion: These results suggest the existence of changes in the vasculature of all layers of the retina in Behçet patients, with clinical evidence of macular involvement, regardless of whether they are in active or inactive phase. In this way OCTA can be used for a noninvasive evaluation of the retinal vasculature and may be useful for the approach of these patients.

FP-UVE-089

Impact of juvenile idiopathic arthritis associated uveitis in early adulthood*de Boer J., Haasnoot A.-M.**University Hospital Utrecht, Ophthalmology, Utrecht, Netherlands*

Purpose: The objective of this study was to analyze juvenile idiopathic arthritis (JIA)-associated uveitis activity, complications and visual prognosis in adulthood.

Method: In this multicenter study, 67 adult patients (129 affected eyes) with JIA-uveitis were retrospectively studied for best corrected visual acuity, visual fields, uveitis activity, topical/systemic treatments, ocular complications, and ocular surgeries during their 18th, 22nd and 30th year of life.

Results: Sixty-two of all 67 included patients (93%) had bilateral uveitis. During their 18th life year, 4/52 patients (8%) had complete remission, 28/52 (54%) had uveitis activity and 37/51 patients (73%) were on systemic immunomodulatory treatment. Bilateral visual impairment or legal blindness occurred in 2/51 patients (4%); unilateral visual impairment or legal blindness occurred in 17/51 patients (33%) aged 18 years. The visual prognosis appeared to be slightly better for patients with uveitis onset after the year 1990 (for uveitis onset before 1990 (n=7) four patients (58%) and for uveitis onset after 1990 (n=44) 13 patients (30%) were either visual impaired or blind). At least one ocular surgery was performed in 10/24 patients (42%) between their 18th and 22nd year of life.

Conclusion: Bilateral visual outcome in early adulthood in patients with JIA-uveitis appears to be fairly good, although one third of the patients developed one visually impaired or blind eye. However, a fair amount of the patients suffered from ongoing uveitis activity and needed ongoing treatment as well as surgical interventions.

FP-UVE-090

Tubulointerstitial nephritis and uveitis syndrome: a systematic review of its epidemiology, demographics and risk factors

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Tubulointerstitial nephritis and uveitis (TINU) syndrome is a rare oculorenal inflammatory condition that was first described in 1975. In 2001 a major review identified 133 cases in the world literature and proposed key diagnostic criteria for the condition. Although acknowledged as rare, the limited data available prevented reliable estimates of the prevalence of the condition, and hampered elucidation of the relationship between genetic and environmental factors that contribute to its pathogenesis.

In this review we have performed a systematic search on the epidemiology, demographics and proposed risk factors for TINU. Estimates of prevalence based on studies that explicitly report TINU cases suggest that it is diagnosed in 0.2-2% of patients attending specialist uveitis services, with variation reflecting a number of factors including level of diagnostic certainty required. The prevalence of uveitis in patients with tubulointerstitial nephritis (TIN) may be higher than currently recognised, particularly in the paediatric population.

The prevalence of TINU is higher in younger age groups and there is a female preponderance although this gender effect appears weaker than suggested by early studies. Although important genetic contributions have been proposed, the small size of studies and variation between reports currently preclude identification of a 'pro-TINU' haplotype. Drugs and infections have been proposed as the leading acquired risk factors for the development of TINU; whilst the small size of TINU cohorts and issues of study design limit interpretation of many studies. Larger datasets from the renal literature suggest that the majority of these cases are precipitated by a drug-induced hypersensitivity reaction; however in many ophthalmic cases no clear precipitant is identified.

FREE PAPER PRESENTATIONS
FP10: Retina (Basic Science)

FP-RET-091

Choroidal thickness in age-related macular degeneration: the role of reticular pseudodrusen

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Purpose: The relationship of reticular pseudodrusen (RPD) and choroidal thickness in Age-related Macular Degeneration (AMD) remains unclear. This study aimed to evaluate choroidal thickness in eyes with intermediate AMD with and without RPD, exploring the advantages of swept-source Optical Coherence Tomography (OCT).

Method: Prospective, cross-sectional study, including patients diagnosed with intermediate AMD, without any other vitreoretinal pathology. All subjects underwent complete ophthalmological exam and color fundus photography (CFP) (Topcon® TRC 50DX), swept source OCT (SS-OCT) (Atlantis, Topcon®) and spectral domain OCT (SD-OCT) (Spectralis®, Heidelberg). The diagnosis of AMD was confirmed in CFP, according to the most recent definition of the Age-Related Eye Disease Study (AREDS) grading scheme. SD-OCT images were evaluated by two independent graders for the presence of drusen and other characteristic features of AMD. SS-OCT images were used to obtain automatic choroidal and retinal thickness maps of the entire macular area, according to the Early Treatment Diabetic Retinopathy Study (ETDRS) sectors. Univariate and multivariate mixed linear models (to account for the inclusion of two eyes of same subject) were performed.

Results: We analyzed 126 eyes of 81 subjects, aged 76.7 ± 9.0 years, mostly females (n=50, 61.7%). One hundred and twelve (88.9%) presented classic drusen, 48 (38.1%) reticular pseudodrusen and 38 (30.2%) both. The multivariate analysis revealed that eyes with RPD presented a statistically significantly decreased choroidal thickness in the central fovea (β =-24.7, p =0.046), after accounting for age and the presence of classic drusen. The same was observed for the inner nasal (β =-28.8, p =0.02:), inner temporal (β =-24.7, p =0.041) and outer nasal sectors (β =-22.9, p =0.045).

Conclusion: In subjects with intermediate AMD, choroidal thickness seems to be associated with RPD. However, the relevance of this association is still not fully understood.

FP-RET-092

Selective influence of short laser pulses on retinal pigment epithelium for central serous chorioretinopathy*Ivanova E.¹, Volodin P.¹, Zheltov G.²**¹The S. Fyodorov Eye Microsurgery Federal State Institution, Laser Surgery Department, Moscow, Russian Federation, ²B.I. Stepanov Institute of Physics National Academy of Sciences, Laser-Optics Technologies for Medicine and Biology, Minsk, Belarus*

Purpose: To evaluate the efficacy and safety of selective influence of short laser pulses on retinal pigment epithelium (RPE) in patients with central serous chorioretinopathy (CSC).

Method: Seventeen eyes of 17 patients with CSC were treated with short laser pulses were performed with IRIDEX IQ 577. All patients presented with subretinal fluid in OCT and leakage in fluorescein angiography. Examinations performed before and at 1 month and 3 months after the treatment. Theoretical model, taking into account thermal properties of chorioretinal complex was used for estimation of parameters of laser pulses. Parameters were optimized to deposit maximal energy in RPE and keep retina undamaged. Multiple spots were placed over and adjacent to the areas of leakage seen on fluorescein angiogram and over the areas of clinical RPE detachments.

Results: Mean age of patients was 41.2 years. The BCVA was 0,78±0,19, which was improved to 0,96±0,08 at the 1 month follow-up and 0,98±0,07 at the final follow-up. Central macular thickness was 366,2±51,4 µm which was changed to 278,7±26,8 µm at the 1 month follow-up and 261,2±31,4 µm at final follow-up. Subretinal fluid was eliminated in all eyes by 3 months after treatment. Retinal sensitivity was 15,21±2,62 dB, which was increased after 1 month (18,46±1,28 dB) and 3 months (19,11±1,21 dB). There were no adverse treatment effects.

Conclusion: Selective influence of short laser pulses on RPE is safe and effective treatment for central serous chorioretinopathy especially if the RPE leak is located close to the fovea.

FP-RET-093

Visual impairment and blindness in a European country - conducting a Rapid Assessment of Avoidable Blindness (RAAB) survey*Németh J.¹, Szabó D.¹, Sándor G.L.¹, Tóth G.¹, Pék A.², Papp A.¹, Nagy Z.Z.¹, Limburg H.³**¹Semmelweis University, Dept. of Ophthalmology, Budapest, Hungary, ²Petz Aladár Hospital, Dept. of Ophthalmology, Győr, Hungary, ³Health Information Services, Grootebroek, Netherlands*

Purpose: To estimate the prevalence and causes of avoidable blindness, severe visual impairment (SVI), moderate visual impairment (MVI), early visual impairment (EVI) in a European country.

Method: A total of 3675 individuals nationwide were planned to be examined in their own households using the standard Rapid Assessment of Avoidable Blindness (RAAB) method. 105 clusters of 35 people 50 years of age or older were selected through probability proportionate to size sampling, in which clusters, households were selected using compact segment sampling. The visual acuity was measured (VA), all participants were examined by ophthalmologists, and they underwent a finger-prick random blood glucose (RBG) test.

Results: The standardized prevalence rates of bilateral blindness, SVI, MVI and EVI were 0.9% (95% CI:0.6-1.2), 0.5% (95% CI:0.2-0.7), 5.6% (95% CI:4.8-6.4) and 7.5% (95% CI:6.5-8.5), respectively. The major causes of blindness were age related macular degeneration (27.3%), and other posterior

segment diseases (27.3%), cataract (21.2%), and glaucoma (12.1%); and cataract was the principal cause of SVI, MVI and EVI. Cataract surgical coverage (CSC) was 90.7%. Of all bilateral blindness 45.5% was considered avoidable: 21.2% was considered treatable, 3.0% avoidable by primary eye care and 21.2% avoidable by specialised ophthalmic care. The prevalence of diabetes was 20.0% among the examined people aged 50+. Any sign of DR was found by 20.1% of patients with diabetes, and any sign of maculopathy by 7.9%.

Conclusion: This survey was the first population-based study on blindness and visual impairment in Central Europe, and demonstrated that AMD, cataract and other posterior segment diseases are the leading causes of SVI and blindness. Although the high CSC, the prevalence of vision-threatening cataract need to be further reduced. Regular ophthalmologic control and intervention could decrease the prevalence of visual impairment, especially in retinal diseases and glaucoma.

FP-RET-094

An automated detection system for diabetic retinopathy that is effective across different racial groups*Wawrzynski J.¹, Saleh G.², Caputo S.², Peto T.², Ismail Al Turk L.³, Wang S.⁴, Hu Y.⁴, Da Cruz L.², Smith P.⁵, Lilian Tang H.⁴**¹Royal Free Hospital, London, United Kingdom, ²Moorfields Eye Hospital, London, United Kingdom, ³Faculty of Sciences, King Abdulaziz University, Statistics Department, Jeddah, Saudi Arabia, ⁴University of Surrey, Department of Computing, Faculty of Engineering, Surrey, United Kingdom, ⁵University of Surrey, Department of Computing, Faculty of Engineering, London, United Kingdom*

Purpose: Patients without diabetic retinopathy (DR) represent a large proportion of the caseload seen by DR screening services so reliable recognition of the absence of DR in digital fundus images (DFIs) is a prime focus of automated DR screening research. We investigate the use of a novel automated DR detection algorithm to assess the retina for absence of DR. We also test how robust the system is across images from patients of differing racial groups and to changes in image resolution/ photographic equipment used.

Method: A retrospective, masked, controlled image-based study was undertaken. 17,850 DFIs of patients from six different countries were assessed for DR by the automated system and by human graders. The system's performance was compared across DFIs from the different countries/ racial groups.

Results: The sensitivities for detection of DR by the automated system were: Kenya 92.8%, Botswana 90.1%, Norway 93.5%, Mongolia 91.3%, China 91.9%, and UK 90.1%. The specificities were: Kenya 82.7%, Botswana 83.2%, Norway 81.3%, Mongolia 82.5%, China 83.0% and UK 79%. There was little variability in the calculated sensitivities and specificities across the six different countries involved in the study.

Conclusion: These data suggest the possible scalability of an automated DR detection platform that enables rapid identification of patients without DR across a wide range of races and taken with varying locally available equipment.

FP-RET-095

Difference in performance using a real life image set and a publicly available image set (Messidor-2) for automated detection of diabetic retinopathy with a deep learning enhanced algorithm

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Purpose: Algorithms for the automated detection of Diabetic Retinopathy are evaluated on a standardized, publicly available set of subjects, Messidor, and achieve high sensitivity and specificity. When tested on subjects in a primary care setting, often performance discrepancies arise.

Method: 1616 Persons with type 2 diabetes screened between 1 Jan 2015, and 1 Jan 2016, for diabetic retinopathy at the STAR-Medical Diagnostics Center (Rotterdam), were included in the current study. Image quality analysis and exam grading were provided by the deep learning enhanced IDx-DR version 2.1 automated screening algorithm and adjudicated three retinal graders (gold standard).

Results are presented for referable diabetic retinopathy (RDR) which was defined as ICDR ≥ 2 and/or macular edema.

Results: Images of 1293 persons were available for analysis. According to the gold standard, RDR was diagnosed in 63 persons (4.8%).

The sensitivity, specificity, PPV and NPV for detection of RDR by IDx-DR (V2.1) were 0.79 (CI: 0.67 - 0.89), 0.94 (95% CI: 0.92 - 0.95), 0.39 (95% CI: 0.31 - 0.48), 0.99 (95% CI: 0.98-0.99) respectively.

The same algorithm IDx-DR (V2.1) on the Messidor-2 image set achieved a higher sensitivity 0.97 (95% CI: 0.93 - 0.99), and specificity 0.87 (95% CI: 0.84 - 0.89), positive predictive value 0.67 (95% CI: 0.62 - 0.73), and a negative predictive value of 0.99 (95% CI: 0.98 - 1.00) for RDR.

Conclusion: The deep learning enhanced automated grading method using IDP, version 2.1 for detection of RDR in a real life image set, and proved to be a valid method to be used in primary care. These results deviated from results reached with widely used publicly available image set (Messidor-2).

FP-RET-096



Assessment and comparison of serum apolipoprotein A-I and B with diabetic retinopathy severity level in patients with type 1 diabetes mellitus

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Purpose: To compare serum apolipoprotein A-I (ApoA-I), apolipoprotein B (ApoB) and their ratios with diabetic retinopathy (DR) severity and maculopathy in type 1 diabetes mellitus (DM) patients.

Method: A cross-sectional study. Serum ApoA-I, ApoB and their ratios were assessed in 176 patients. Patients were divided into three groups according to fundus photo:

- i) no DR-no abnormalities;
- ii) mild non proliferative DR (NPDR)-microaneurysms only;
- iii) proliferative DR (PDR)-the eyes with treated or active retinal neovascularisation.

The presence of microaneurysms or hard exudates in the central retina was defined as maculopathy.

Results: Patients with PDR presented with longer duration of DM, were older and had higher HbA1C in comparison to no DR and mild NPDR group ($P < 0.001$; $P=0.006$; $P=0.01$). Significantly lower serum Apo-I/ApoB ratio (1.83(0.59)), higher concentration in serum ApoB (1.02(0.27)g/L) and ApoB/ApoA-I ratio 0.6(0.18) had PDR group comparing with patients without DR or with mild NPDR ($P < 0.05$). No significant difference in serum ApoA-I was estimated between the DR severity groups ($P=0.06$). There was a significant and low correlation between ApoB/ApoA-I and maculopathy ($r = 0.182$; $P= 0.016$). ApoA-I was significantly higher in no PDR without maculopathy (1.89(0.5)g/L) group comparing with no PDR with maculopathy patients (1.7(0.26)g/L); ($P=0.04$), while ApoB/ApoA-I ratio in the group with PDR and without maculopathy was significantly lower (0.67(0.23)) comparing PDR with maculopathy (0.57(0.1)); ($P=0.05$).

Conclusion: In patients with PDR we observed significantly higher serum ApoB and ApoB/ApoA-I ratio, lower ApoA-I/ApoB ratio comparing with no DR and mild NPDR group. Patients with PDR and maculopathy had higher ApoB/ApoA-I ratio than patients with PDR and without maculopathy. Further prospective studies are needed to show that serum ApoA-I, ApoB and their ratios have significant ability to discriminate the development and progression of severe DR and maculopathy.

FP-RET-097

Phase I/II clinical trial of human embryonic stem cell (hESC)-derived retinal pigmented epithelium (RPE) transplantation in Stargardt disease (STGD): one-year results

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Purpose: Stargardt disease is the most prevalent juvenile-onset inherited maculopathy. Defects in the gene ABCA4 lead to accumulation of toxic vitamin A derivatives in cells of the RPE, causing RPE dysfunction and degeneration. Retinal function may be protected or promoted by provision of a replenished

population of RPE cells. Human embryonic stem cells (hESCs) provide one source of RPE cells for transplantation. Our aim was to investigate the safety and tolerability of subretinal transplantation of a suspension of hESC-derived RPE cells in advanced Stargardt disease.

Methods: We included 12 participants (aged 34 - 45 years) with clinical and electroretinographic features of advanced Stargardt disease. Following pars plana vitrectomy we injected subretinally a suspension of hESC-derived RPE cells at doses of 50 K, 100 K, 150 K and 200 K cells. Participants were administered systemic immunosuppression until 3 months after the transplant procedure. We assessed systemic and ocular safety, indicators of cell survival and retinal function for 12 months.

Results: We observed the development of areas of subretinal hyperpigmentation in all participants, suggesting survival and engraftment of hESC-derived RPE cells. The extent of hyperpigmentation correlated positively with the dose of cells administered. Hyperpigmentation was associated with areas of hyper-autofluorescence. We identified no evidence of tumorigenicity, immune adverse events or other serious safety concerns related to the transplanted cells. Assessment of ETDRS visual acuity, microperimetry, static full field perimetry and electroretinography demonstrated no significant loss of visual function in the study eye of any participant.

Conclusions: Subretinal transplantation of hESC-derived RPE cells in Stargardt disease appears safe and well tolerated up to 12 months. The favourable safety profile supports the prospect of further studies to investigate the potential for benefit in less advanced disease.

FP-RET-098

Retinal dystrophy and deafness associated with the homozygous missense and putative splice site variant c.991T>C (p.Cys331Arg) in exon 8 of the *DFNA5* gene *Schatz P.^{1,2}, Abu-Safieh L.³*

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Purpose: To report the association between retinal dystrophy and deafness with the homozygous missense variant c.991T>C (p.Cys331Arg) in exon 8 of the *DFNA5* gene.

Method: Retrospective clinical and molecular genetic study of a family with clinical features suggestive of Usher syndrome. Clinical investigations included electrophysiological assessment of retinal function by means of full-field electroretinography (ffERG) and wide-field and high resolution cross sectional retinal imaging of affected and unaffected family members. Molecular genetic testing included next generation sequencing (NGS) of a panel of retinal dystrophy genes and genes associated with deafness.

Results: A 30 year old male with onset of progressively poor hearing, night vision loss and decreased vision noticed since age 10 years was examined. ffERG was unrecordable in both eyes and there was an absence of the inner segment ellipsoid and outer nuclear layer outside the foveas. Nummular hyperpigmented lesions were noted in the periphery. NGS revealed the homozygous missense variant c.991T>C (p.Cys331Arg) in exon 8 of the *DFNA5* gene [allele frequency 0.01% in the ExAC browser (<http://exac.broadinstitute.org/>), not described in the literature]. The variant affects the first nucleotide of exon 8, adjacent to the splice acceptor motif. Bioinformatic programs predict a loss of the acceptor splice site. Unaffected family members including mother and father had normal electrophysiology and imaging.

Conclusion: Only a few *DFNA5* mutations leading to autosomal dominant non-syndromic sensorineuronal hearing loss (ADNSHL) have been described to date, which all lead to exon 8 skipping at the mRNA level. So far, no bial-

lelic mutations in *DFNA5* have been described as cause of any human disease. This is the first report suggesting that homozygous mutations *DFNA5* may underlie genetically unsolved forms of Usher syndrome and that the gene may be a candidate gene for recessive retinal dystrophy.

FP-RET-099

Codon optimised human RPGR in AAV8 gene therapy for X-linked retinitis pigmentosa

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Purpose: Mutations in *RPGR* cause 70% of X-linked retinitis pigmentosa (XLRP) and can lead to unpredictable recombination errors during viral vector cloning for gene therapy. Here, we describe a codon optimised *RPGR* gene replacement therapy using AAV8 for human XLRP disease.

Method: Codons of the human *RPGR* coding sequence (CDS) were optimized and tested for expression efficiency and sequence stability *in vitro* using immunohistochemistry, flow cytometry, and western blotting. Recombinant *RPGR* was characterized by western, mass spectrometry and glutamylation assays. Codon optimised *RPGR* was tested *in vivo* in two relevant animal models (*Rpgr*^{-y} and *C57BL/6J*^{rd9/Boc}) and in *C57BL/6J* wild-type mice. Electroretinography, scanning laser ophthalmoscopy and immunohistochemistry were used to assess safety and efficacy.

Results: Codon optimised *RPGR* shows superior sequence stability and expression levels *in vitro*. The glutamylation pattern in the resulting *RPGR* protein indistinguishable from the wild-type variant, implying that codon-optimisation does not significantly alter post-translational modification. Significantly, when delivered by AAV8 vector, the codon-optimised *RPGR* rescues the disease phenotype in two relevant animal models and shows good safety in wild-type mice.

Conclusion: Optimising the CDS of human *RPGR* overcomes the inherent sequence instability of therapeutic transgenes developed for XLRP gene therapy. While maintaining post-translational characteristics and increasing expression levels, *RPGR* based gene therapy shows excellent safety in wild-type mice and efficacy in two relevant animal models of human XLRP disease. This work provides the basis for clinical trial development to treat patients with XLRP due to *RPGR* mutations.

FP-RET-100

Evidence for a retinal progenitor cell in the postnatal and adult mouse

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Purpose: Previously, the retina was believed to be an organ that contained heterogeneous progenitor cells. To our knowledge, a population of cells that express a stem cell antigen on its surface and maintains the self-renewing and multipotent characteristics of a stem cell *in vivo* remained to be discovered. Here, we are investigating whether c-kit identifies a retinal stem cell population that contributes to the homeostasis of cells in the retina after birth.

Method: By immunocytochemistry and flow cytometry, c-kit⁺ cells were recognized in postnatal retinas. To characterize c-kit⁺ cells in adult retinas *in vivo*, we set up a mouse line of *cKit^{CreERT2/+};IRG* and traced the progeny of c-kit⁺ cells. Also, retinal c-kit⁺ cells were isolated via magnetic-activated cell sorting, and their self-renewal, clonogenic and differentiation potential were detected by immunocytochemistry and flow cytometry *in vitro*.

Results: By combining traditional methods with lineage tracing mice, we have identified a c-kit⁺ cell that is self-renewing, clonogenic and multipotent, and capable of generating many cell types both *in vitro* and *in vivo*. Based on fate mapping, significant subpopulations of photoreceptors in the outer nuclear layer and bipolar cells, horizontal cells, amacrine cells and Müller cells in the inner nuclear layer of the retina are the progeny of c-kit⁺ cells in the adult mouse.

Conclusion: Here, we report for the first time that the mouse eye possesses a primitive c-kit⁺ cell that is self-renewing, clonogenic and multipotent, the three critical identifiers of tissue specific stem/progenitor cells. The progeny of c-kit⁺ cells contribute to retinal neurons and glial cells responsible for conversion of light into visual signals. Moreover, we propose that the ability to specifically isolate a homogeneous population of cells using c-kit as a marker, and expanding these cells *in vitro*, will provide future cell therapeutic strategies for retinal diseases.

RAPID FIRE PRESENTATIONS

RF01: Neuro-ophthalmology, Ocular Surface, Oculoplastics

RF-NEO-101

Phenotypic variation in three family members with Leber Hereditary Optic Neuropathy in the Caribbean basin: where is this mutation coming from?

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Purpose: To report three matrilineal family members with Leber Hereditary Optic Neuropathy (LHON) with the 11778 mutation and diverse phenotypic manifestations.

Method: A chart review of three patients with LHON was done. Genetic analysis of mitochondrial DNA mutation were conducted. Demographic data was analyzed. A comprehensive ophthalmic examination was done. Clinical features of 2 male siblings with LHON and a maternal cousin were evaluated. Humphrey's visual field tests and optic nerve OCT were obtained.

Results: The average age of onset of symptoms in affected subjects was 17.5 years old (range 17 to 18 years). Three male patients were from the southeastern region of Puerto Rico.

All patients were found to have the 11778 mutation.

Patient 1 presented with acute bilateral vision loss. Visual field test showed complete field loss in both eyes.

Patient 2 presented with subacute unilateral vision loss of the right eye. Visual field test showed cecocentral scotoma in the right eye and was normal in the left eye.

Patient 3 has not had any vision loss at 24 years-of-age, and visual fields were normal in both eyes.

Conclusion: This is the first report on LHON patients from the Caribbean basin. The basis for such phenotypic variation in family members who share the same LHON mutation remains to be established. Further studies to evaluate the origin of the 11778 mutation in Puerto Rican patients are warranted.

RF-NEO-102

The usefulness of microperimetry and contrast sensitivity testing in patients with early chiasmal compression caused by pituitary adenomas

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Purpose: The aim of the study is to determine the parameters in microperimetry and contrast sensitivity testing, which are the most useful in the diagnosis of early chiasmal compression caused by pituitary adenomas.

Method: Control group included healthy patients (group 1). Patients with macroadenoma of pituitary gland were divided into two groups depending on the absence (group 2) or presence (group 3) of optic chiasm compression detected in magnetic resonance imaging (MRI) with contrast. Each of the study groups and control group included 20 patients (40 eyes). Altogether 60 patients (120 eyes) were examined.

Results: Analysis of the variables between group 1 and group 2 showed no statistically significant differences in mean sensitivity (MS) and mean defect (MD) in microperimetry. Only after division of the examined area in microperimetry into quadrants, the difference has been demonstrated in mean sensitivity in lower-nasal quadrant (MS LN) $p < 0.05$ and mean defect in lower-nasal quadrant (MD LN) $p < 0.05$ between those groups. The analysis of receiver operating characteristic (ROC) curves indicated that parameters such as MS LN in microperimetry, row D and E in contrast sensitivity could be highly specific to predict early optic nerve damage in patients with pituitary adenoma.

Conclusion: Microperimetry and contrast sensitivity testing are non-invasive diagnostic examinations additional to MRI, which enable detection of early optic chiasm compression due to pituitary adenomas and are useful for monitoring disease progression. This allows for making earlier decision on the surgery, before irreversible damage to the visual pathway occurs.

RF-NEO-103

Abstract has been withdrawn.

RF-NEO-104

Clinical features of dysthyroid optic neuropathy

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Purpose: This study was performed to determine clinical features of dysthyroid optic neuropathy (DON) in Polish population.

Method: Retrospective analysis of patients diagnosed with DON between January 2012 and December 2016 in Department of Ophthalmology of *The Infant Jesus Teaching Hospital, Warsaw*. The analysis included: thyroid status and ophthalmic examination. Each eye was classified as having definite, equivocal, or no DON.

Results: 36 patients (27 females, 9 males), mean age 60 (range 31 - 81 years) were diagnosed with DON. Of 71 eyes, 49 had definite and 11 equivocal DON. 15 patients had bilateral DON. Graves' hyperthyroidism occurred in the majority (86%). Median Clinical Activity Score was 4/7 but 12% scored less than 3, indicating severe inflammation was not essential.

Best corrected visual acuity was worse than 0,7 (Snellen) in 70% of DON eyes. Colour vision was reduced in 25 of DON eyes (55%). 55% of the DON eyes had normal optic disc appearance, 29% optic disc swelling and 15% optic disc pallor.

Visual fields abnormalities were present in 60% of DON eyes. There were 8 patients with an afferent pupillary defect. In DON eyes mean proptosis was 22 mm (range 16 - 29).

Conclusion: Patients with DON may not have severe proptosis and orbital inflammation. Optic disc swelling and impaired colour vision are the most useful clinical features in this series. Impaired visual acuity may be useful clinical feature but normal visual acuity (Snellen fraction of 1.0) did not preclude the diagnosis.

RF-NEO-105

Progressive retinal degeneration and visual dysfunction in patients with Parkinson disease

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Purpose: To evaluate changes in visual function parameters and in retinal thickness of patients with Parkinson disease (PD) over a period of 5 years.

Method: Thirty patients (60 eyes) with PD and 30 healthy subjects (60 eyes) underwent a complete evaluation including assessment of visual acuity (VA) with ETDRS chart, color vision with Farnsworth and Lanthony D15 tests and contrast sensitivity vision (CSV) with Pelli Robson and CSV 1000E tests; and retinal evaluation (retinal nerve fiber layer thickness and macular thickness) using Spectral domain Optical coherence tomography (SD-OCT). All subjects were reevaluated after 5 years to quantify progressive changes.

Results: Changes were detected in visual function parameters (VA, CSV and Lanthony color indexes; $p < 0.05$) and RNFL thickness (inferotemporal, superotemporal and temporal sectors; $p < 0.001$) in PD patients compared to controls.

Greater changes in VA, CSV and color vision ($p < 0.05$) were detected during the follow-up in the PD group compared to healthy subjects.

Greater loss of the RNFL (superotemporal and temporal sectors; $p < 0.001$) and macular thickness (all sectors except inner superior and inner inferior sectors, $p < 0.001$) was observed in the patients group after the 5-year follow-up.

Conclusion: Progressive visual dysfunction, macular thinning and axonal loss can be detected in PD patients. Analysis of the macular thickness and the RNFL by SD-OCT can be useful for evaluating PD progression.

RF-NEO-106

Adaptive optics imaging and angio-OCT parameters in CADASIL patients

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Purpose: To evaluate retinal artery wall thickness (WT) and artery lumen (LM) in CADASIL using adaptive optics imaging. Furthermore to correlate the results with choroid thickness and FAZ area assessed with angio-optical coherence tomography (angio-OCT).

CADASIL (Cerebral Autosomal Dominant Arteriopathy with Subcortical Infarcts and Leucoencephalopathy) is a rare disease leading to infarcts in patients with no known atherosclerosis risk factors. This paper aims to verify the hypothesis of some subclinical changes in small arteries in CADASIL patients checked on the retinal circulation.

Method: 11 CADASIL patients with mutation in Notch 3 gene on chromosome 19 and 24 healthy controls underwent adaptive optics imaging (wall thickness and lumen of the arteries checked in three different standardized regions) and angio-OCT scans (choroid thickness measured directly underneath the foveola, FAZ area). The results were correlated (Statistica 2015) with general health, mainly history of prior stroke and headaches.

Results: Wall thickness of the arteries in CADASIL patients was positively correlated with stroke ($p = 0.03$). CADASIL patients had thicker wall thickness (WT) and smaller artery lumen than the healthy controls ($p < 0.05$). Choroid

thickness of CADASIL patients who were affected by stroke was significantly thicker than CADASIL patients without the history of stroke (Mean= 0.312 vs 0.414 μm , $p < 0.05$). FAZ area was significantly smaller in stroke patients than in healthy controls and CADASIL patients with no stroke history (Mean 1,35 vs 2,34 vs 3,05 mm^2)

Conclusion: Adaptive optics imaging and angio-OCT can be useful tools for diagnosing, monitoring and assessing stroke risk in CADASIL patients. Furthermore, subclinical changes in retinal vessel may be a predictive factor for a cerebral infarct in CADASIL patients and a reason to introduce preventive therapy in this group of patients.

RF-NEO-107

Perimetry comparisons of Octopus Dynamic versus Humphrey SITA-Fast perimetry using 30-2 & 24-2 programmes

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Purpose: Comparisons between the Octopus and Humphrey perimeters are complex due to the differing operating systems. Thus we sought to determine the extent of differences between the Humphrey and Octopus-900 perimeter using central static programmes commonly applied in standard clinical practice.

Method: We evaluated the Octopus 30-2 or 24-2 dynamic programmes with the Humphrey 30-2 or 24-2 SITA-fast programmes respectively. Reliable visual fields had less than 25% errors. Comparison and agreement for global visual indices were determined using the t-test and Bland-Altman plots. Clinical agreement of visual fields was determined by qualitative assessment for the presence of visual field defect.

Results: Fifty-seven patients (107 eyes) were recruited. 32 results were excluded due to poor reliability. 30 patients (54 eyes) underwent 30-2 perimetry assessment: 11 males and 17 females. 11 patients (21 eyes): 5 males and 6 females, underwent 24-2 perimetry assessment.

For both 30-2 and 24-2 perimetry groups the Humphrey SITA-fast showed a higher mean sensitivity (mean differences (dB): 4.57±0.75, $p < 0.001$ and 4.60±1.08, $p < 0.001$) than the Octopus-dynamic respectively. The mean deviation score was lower on the Humphrey SITA-fast than the Octopus-dynamic (mean differences (dB): -1.93±0.66, $p = 0.004$ and -2.25±0.85, $p = 0.012$). Bland-Altman plots showed good agreement for mildly affected visual fields, but large discrepancies were seen in moderate and severely affected visual fields. Clinical comparison of visual fields showed strong agreement ($a = 0.89$, $p < 0.001$).

Conclusion: Comparison of the Octopus-dynamic versus the Humphrey SITA-fast programmes showed significant bias. Visual fields were comparable for mild defects but not severe visual loss. Octopus-dynamic perimetry shows more extensive visual field loss relating to the different strategies used. These perimetry results are not interchangeable.

RF-NEO-108

Correlation between visual function and retinal changes in patients with multiple sclerosis

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Purpose: To evaluate structural changes in the retina and their correlation with visual dysfunction in patients with multiple sclerosis.

Method: Patients with multiple sclerosis (n=84) and healthy controls (n=84) underwent structural evaluation of the retinal nerve fiber layer, and macular and ganglion cell layer thicknesses using Spectral domain optical coherence tomography (SD-OCT). All subjects underwent high and low contrast visual acuity, color vision (using the Farnsworth and L'Anthony desaturated D15 color tests), and contrast sensitivity vision using the Pelli Robson chart and CSV 1000E test.

Results: Macular, retinal nerve fiber layer, and ganglion cell layer thinning was observed in multiple sclerosis patients compared to healthy controls ($p < 0.05$). High and low contrast visual acuity and contrast sensitivity vision at four different spatial frequencies were significantly reduced, compared with healthy subjects ($p < 0.05$). Macular, retinal nerve fiber layer and ganglion cell layer measurements correlated with high and low contrast visual acuity, and contrast sensitivity vision.

Contrast sensitivity vision was the functional parameter that most strongly correlated with the structural measurements in multiple sclerosis and was associated with ganglion cell layer measurements. The L'Anthony color vision score (age-corrected color confusion index) was associated with macular measurements.

Conclusion: Patients with multiple sclerosis had visual dysfunction that correlated with structural changes evaluated by SD-OCT. Macular and ganglion cell layer measurements may be good indicators of visual impairment in multiple sclerosis patients.

RF-OCS-110

Semi-fluorinated alkanes for topical ocular delivery of cyclosporine A

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Purpose: Cyclosporine A (CsA) is an anti-inflammatory agent that has been frequently used to treat ocular inflammatory conditions, such as dry eye syndrome. However, the poor water solubility of CsA makes it difficult to formulate into an acceptable ocular dosage form. Semi-fluorinated alkanes (SFAs) are a novel class of inert, non-toxic and amphiphilic liquids that form clear solutions with CsA and have been suggested as efficient carriers for topical administration of CsA.

The aim of this study was to assess the corneal bioavailability of CsA from SFAs compared to currently marketed formulations.

Methods: An *ex vivo* porcine eye model was used to study the penetration of a) Restasis® (0.05% CsA ophthalmic emulsion), b) Ikervis® (0.1% CsA ophthalmic emulsion), and c) 0.05% or 0.1% CsA in SFAs. The amount of drug penetrated per gram of cornea between 0.5 to 4 h after application was assayed by HPLC and statistically compared using Holm-Sidak's multiple comparison test, while also calculating area under the curve (AUC_{0-4h}) and relative bioavailability. Drug distribution in different layers of the cornea was also visualized by substituting CsA with a hydrophobic dye and viewing corneal sections under a fluorescent microscope.

Results: Significant improvement ($p \leq 0.0001$) in corneal penetration of CsA could be observed for 0.05% CsA in SFAs ($C_{1h} = 5,844 \pm 2,408$ ng/g) compared to Restasis ($C_{1h} = 761 \pm 221$ ng/g), with the AUC being over 8-folds greater. Similarly, corneal CsA concentrations for 0.1% CsA in SFAs ($C_{1h} = 12,556 \pm 4,017$ ng/g) were significantly ($p \leq 0.0001$) higher than for Ikervis ($C_{1h} = 2,900 \pm 341$ ng/g), with the AUC being 3.6-folds greater. Microscopic examinations revealed that the dye delivered by SFAs penetrated the entire corneal epithelium and also diffused across the corneal stroma.

Conclusion: SFAs can significantly improve the corneal absorption of hydrophobic drugs such as CsA and are therefore a promising platform for drug delivery to the eye.

RF-OCS-111

Determining the frequency of dry eye in computer users and comparing with control group

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Introduction: The increasing use of computers in the last decade has become an integral part of modern life. This rate of using computer has been associated with many physical and mental effects.

Methods: This study was case control research conducted in 2015 in the city of Birjand. Sample size of study was estimated to be 304 subjects (152 subjects in each group). Non-randomized and convenient method of sampling was used in both groups. Schirmer test was used to evaluate dry eye of subjects. Then, subjects completed questionnaire. This questionnaire was developed based on objectives and reviewing the literature. After collecting the data, they were entered to SPSS Software and they were analyzed using chi-square test or Fisher's test at the alpha level of 0.05.

Results: in total, 304 subjects (152 subjects in each group) were included in the study. Frequency of dry eyes in the control group was 3.3% (5 subjects) and it was 61.8 in computer users group (94 subjects).

Significant difference was observed between two groups in this regard ($p=0.0001$). The frequency of eye symptoms in the control group was 7.9% ($n = 12$), and it was 34.2% in computer users group ($n = 52$), which significant difference was observed between two groups in this regard ($p=0.0001$). Frequency of dry eye syndrome in computer users by gender and age groups showed no significant correlation in this regard ($p=0.8$).

The mean working hour with computer per day in patients with dry eye was 6.65 ± 3.52 hours, while it was 1.62 ± 2.54 hours in healthy group ($p=0.0001$, $t=13.25$).

Conclusion: This study showed a significant relationship between using computer and dry eye and ocular symptoms. Thus, it is necessary that officials to pay particular attention to working hours with computer by employees. They should also develop appropriate plans to divide the working hours with computer among computer users.

RF-OPL-114

Functional and cosmetic non-surgical periocular treatment

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Purpose: Non-surgical treatment is increasingly used for the treatment of a variety of functional and cosmetic conditions involving the eyelids, instead of the established invasive treatment.

Method: We describe the use of aesthetic and non-aesthetic bloodless periocular technology and we present the cases before and after the treatment.

Results: Non-surgical treatment can successfully replace the surgical removal of conditions such as xanthelasma, cysts, papillomas, milia and syringomas of the eyelids. Additionally, it can substitute blepharoplasty in mild cases.

Conclusion: Bloodless non-surgical periocular treatment can potentially be used for a variety of applications, as it offers satisfactory results without invasive techniques.

RAPID FIRE PRESENTATIONS

RF02: Electrophysiology, Education, Oncology & Pathology, Paediatric Ophthalmology & Strabismus, Uveitis

RF-EDU-115

Would you mind if a doctor in training performs your cataract surgery? A patient-perspective survey on the role of trainees in surgery

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Purpose: Traditionally, patients having surgery in teaching hospitals have not been fully aware of the role that doctors in training have had in their surgeries. As we move towards a more transparent society, patients are becoming empowered and may want to participate in decisions concerning their own health. The purpose of this pilot survey was to explore the attitudes that our patients have on the involvement of doctors in training in ophthalmic surgery.

Method: An anonymized questionnaire was given to 39 consecutive patients who had undergone cataract surgery by different doctors (including supervised trainees and consultants) at our institution during the last 12 months.

Results: Thirty-nine patients filled-out the questionnaire. Their mean age was 74.2 ± 9.7 years, and 27 were women (69.2%). Twenty-two patients (56.4%) considered that the consultant in charge should inform the patient of the role the trainee may have in their surgery, and 4 (10%) thought that the trainee should inform the patient. Twenty-four patients (61.5%) thought that this should be included in the written informed consent. Twenty patients (51.3%) would feel disappointed if they learnt that a trainee has performed their surgery without their knowledge. Thirty-one (79.5%) patients agreed that is normal that doctors in training may participate in any aspect of healthcare in a teaching hospital. Twenty-nine (74.4%) patients would agree to have their surgery performed by a supervised trainee, but 7 (17.9%) but seek to have their elective surgery done elsewhere.

Conclusion: Patients from our catchment area prefer to be informed about the participation of a doctor in training in their surgery, preferably by the consultant in charge. Most patients understand that surgery training is necessary, and would agree to have their surgery performed by a supervised doctor in training when informed in advance.

RF-ONC-116

Recurrence and infiltration of the orbit in periocular basal cell carcinoma*Furdova A., Juhas J.**Comenius University, Dept. of Ophthalmology, Bratislava, Slovakia*

Purpose: To evaluate the significance of the risk factors of patients with periocular basal cell carcinoma (BCC) who underwent exenteration of the orbit.

Methods: Retrospective study of patients with BCC between 2008 and 2015.

Results: In group of 286 patients orbital exenteration underwent 9 patients (3.1%). In the exenterated group, the most common tumor site was the medial cantus and lower eyelid, whereas in the overall group, it was the lower eyelid ($P=0.011$). The proportion of patients initially treated with histopathologic result of infiltration of one margin was significantly higher in patients undergoing exenteration ($P=0.283$). We have seen 13 recurrences (4.5 %). In patients with recurrent BCC after surgery we applied adjuvant HDR ^{192}Ir brachytherapy. Neoadjuvant therapy with Vismodegib was effective in patient with biorbital infiltration after one side exenteration.

Conclusions: Recurrence rate of BCC in our group corresponds to data in the literature. The exenteration for BCC may be significantly higher when the lesion involves a medial canthal location and lower eyelid and initial surgery does not include margin-controlled excision.

RF-ONC-117

Case report of large size iridociliary melanoma treated by iridocyclectomy*Skhirtladze S.¹, Labauri N.², Omiadze M.³**¹Akhali Mzera, Tbilisi, Georgia, ²DAVINCI Eye Clinic, Tbilisi, Georgia,**³New Hospitals, Tbilisi, Georgia*

Purpose: To demonstrate the surgical technique of iridocyclectomy for large size iridociliary melanoma using intra and extra ocular approach.

Method: A 57 years old female has been operated on her right eye for large size (8x5x3mm) iridociliary melanoma using iridocyclectomy technique. Tumor was occupying 4 clock hour meridians of the nasal part of the iris and ciliary body. Preoperatively the best corrected visual acuity was 20/40 (0.5 in decimals) and Intraocular pressure was 16mm/Hg. Lens crystalline was clear and posterior segment within normal limits.

After thorough metastatic work-up for tumor staging using liver function tests, chest X-ray and full MRT scan surgical removal of the tumor was planned. After performing the conjunctival peritomy and Tenon's dissection, a "hat" shape lamellar scleral flap has been made using crescent knife. Two paracentesis was made to perform sectoral iridotomy using 23 gauge intraocular scissors. Following that, deep sclera was removed to expose the ciliary part of the tumor and cut it off as an entire lesion. Scleral flap has been reapposed and sutured on its original place using 8.0 vycril, interrupted sutures, followed by Tenon's and conjunctival closure.

Results: Patient has been reviewed by the next day, one week, one month, three months and six months post operatively. Lens crystalline is transparent and well centered. Intraocular pressure remains within normal limits. At the last follow up her best corrected visual acuity was 20/40 (0.5 decimals), same as preoperatively. Histopathology confirmed spindle shape malignant melanoma cells. She has no evidence of tumor recurrence and no signs of metastasis during repeated examinations done 6 months postoperatively.

Conclusion: Iridocyclectomy for the primary iridociliary melanoma as a stand alone approach without any supplementary therapy such as charged particle radiation and chemotherapy, appears to be effective in a long run as it has also been shown in the other studies.

RF-ONC-118

Use of adjuvant sub-tenons anaesthesia in primary enucleations in reducing pain and incidence of bradycardia from the oculo-cardiac reflex*Arora A.**Moorfields Eye Hospital, Ocular Oncology, London, United Kingdom*

Purpose: To evaluate the benefit of adjuvant sub-tenons anaesthetic during primary enucleation surgery in reducing post-operative pain. Secondary target in reducing the incidence of bradycardia induced by oculo-cardiac reflex.

Method: 30 eyes of 30 patients were randomly allocated to either receiving early adjuvant sub-tenons anaesthesia or sub-conjunctival anaesthesia at the end of surgery. Patients were excluded if the eye was painful before surgery. Patients' pain scores were recorded 2 hours following surgery and again the following morning using graphical pain scores and questionnaire. The incidence of bradycardia during surgery was recorded if this occurred with muscle manipulation.

Results: There was a mean reduction of 30% in pain scores using sub-tenons anaesthesia during surgery when recorded over 18-24 hours. There was a similar reduction in the incidence of bradycardia during surgery. There were no complications with giving the local anaesthesia.

Conclusion: The use of adjuvant sub-tenons anaesthesia during primary enucleation surgery is beneficial in reducing post-operative pain for the patient as well as reducing the risk of bradycardia during surgery.

RF-ONC-119

Diagnostic role of first retinoblastoma signs*Bobrova N., Sorochynska T.**SI 'Filatov Institute of Eye Diseases and Tissue Therapy NAMS of Ukraine', Odessa, Ukraine*

Purpose: To study retinoblastoma (RB) clinical manifestation in Ukraine

Methods: Medical history of 273 children (350 eyes) aged 2 - 83 (ave 22,3±21,6) mo/o with RB treated during last 10 years in Ukrainian Pediatric Ophthalmology Centre was analyzed retrospectively.

Results: Unilateral RB was in 67,3 % of children, bilateral - in 32,7 %, mostly in patients under 1 y/o (72%). Familial cases consist 9,8%. Leukocoria was most often complain noticed by parents - 60,8 % and was a feature of late T3-T4 RB stages in 90% cases, and only in 12,5% at T1 stage with tumor focuses in the central part of retina.

Squint as a first symptom was marked in 22.6% eyes and caused by macular RB localization and significant vision loss (13,5%), other visible signs (eye irritation, photophobia, epiphora, macrophthalmos, exophthalmos, corneal opacity, mydriasis, iris heterochromia, etc.) - in 12,8 %, poor general condition (slackness, drowsiness, anorexia, vomiting, pain syndrome) - 8,4 %. "Lag time": parents' consists 2,4±4,8mo, doctor's - 1,0 ± 3,6mo, common - 3,4 ± 5,7mo.

Unilateral RB in 11% cases had atypical clinical picture, manifested as uveitis with pseudohypopyon, haemophthalmos, cataract or Coats disease.

According WHO-classification majority of eyes had T3 (69%) and T4 (9%) RB stages, T1 and T2 stages were detected only in 9% and 13% respectively.

Conclusions: Leukocoria is the most often symptom (60,8 %) characterizes late T3-T4 RB stages. Squint (22.6%) observes in cases with central tumor localization & vision loss. Early T1-T2 RB stages mainly diagnoses during complex examination in the Pediatric Ophthalmology Centre as a rule on the pair "healthy" eye in cases of unilateral RB according primary manifestation.

RF-EPH-120

The results of electrophysiological functional activity of the retina in patients with proliferative diabetic retinopathy after vitrectomy*Putiienko O.¹, Pogorilli D.², Elhaj Emhammed A.³**¹Filatov Institute of Eye Diseases, Vitreoretinal Surgery, Odesa, Ukraine, ²Military Medical Clinical Centre of South Region, Vitreoretinal Surgery, Odesa, Ukraine, ³Filatov Institute of Eye Diseases, Vitreoretinal Surgery, Tripoly, Libyan Arab Jamahiriya*

Purpose: to study the functional activity of the retina in patients with proliferative diabetic retinopathy (PDRP) after vitrectomy in terms of 2 and 12 months.

Method: Were observed 105 patients (105 eyes) PDRP. In 48 patients (45.7%) vitrectomy was due to vitreous hemorrhage without epiretinal membrane, 47 eyes (44.8%) due to tractional detachment of the macula, 10 eyes (9.5%) - tractional-rhegmatogenous retinal detachment. Electrophysiological studies included scotopic and photopic ERG, oscillatory potentials, flicker response to stimuli with a frequency of 30Hz (rhythmical ERG) and the standard combined ERG.

Results: In 2 months after vitrectomy it was found the decreasing of the functional activity of the photoreceptors in 2 times in compare with normal indexes, and the middle layers of the retina (bipolar cells) in 4 times lower than the norm, with a greater degree of suffering of cones. According oscillatory potentials remained severe retinal ischemia with increasing latency as the negative and positive peaks in the 4-5 times to 6-9 times reduction in amplitude. This electrical activity in patients with macular tractional detachment and tractional-rhegmatogenous retinal detachment was significantly lower than in patients with vitreous hemorrhage. After 12 months the character of changes of retinal bioelectric activity was similar to those obtained in the earlier observation period.

No significant differences in all investigated indices in terms of 2 and 12 months had been received. Instead of attachment of the retina during 1 year bioelectrical retinal functional activity in patients with tractional retinal detachment is significantly lower than that of patients who had surgery due to vitreous hemorrhage with attached retina.

Conclusion: The long-term stabilization of the proliferative process after vitrectomy in patients of PDRP, does not lead to an improvement in the functional state of the retina, which requires intensive neuroprotective therapy.

RF-UVE-121

Dengue uveitis patterns, trends and outcomes over 12 years*Mi F.H.¹, Ismail M.A.B.¹, Teoh S.C.B.^{1,2}, Ho S.L.¹, Agrawal R.¹**¹National Healthcare Group Eye Institute, Tan Tock Seng Hospital, Ophthalmology, Singapore, Singapore, ²Eagle Eye Centre, Singapore, Singapore*

Purpose: This study aims to report the epidemiology, clinical presentation, trends and outcomes of dengue uveitis patients seen by a tertiary eye centre in Singapore over the duration of 12 years.

Methods: We conducted a retrospective analysis of 53 consecutive dengue uveitis cases, out of a total of 1666 cases, between 2004-2015. Data collected included demographics, clinical findings, and ocular complications. Diagnosis for dengue uveitis was confirmed with the detection of dengue IgM antibodies.

Results: There is a higher proportion of male patients (60.4%). 40 of the patients (75.5%) had bilateral disease, and there were a total of 93 affected eyes. 34 patients (64.2%) had macular oedema, while 30 patients had retinal

vasculitis (56.6%), and 5 had retinitis (9.4%). 52 patients (98.1%) had posterior uveitis, while 1 patient (1.9%) presented with panuveitis. 6 patients had complication of cystoid macular oedema (11.3%). 52 patients (98.1%) of the patients did not have any recurrences. The visual acuity at presentation ranged from 6/6 to counting fingers at 1 meter. Out of the 93 affected eyes, 73 (78.5%) had vision of 6/7.5 or better after resolution of the disease, and all had vision of 6/12 or better. There is a statistically significant downward trend for the occurrence of dengue uveitis over the observed years, with Spearman's rho correlation of -0.771 (p=0.01).

Conclusion: Dengue uveitis typically manifests as posterior uveitis, and the commonest presentation was macular oedema. The dengue uveitis incidence correlates well with the national statistics of dengue infections.

The statistically significant downward trend of dengue uveitis noted in our study could be due to Singapore's dengue surveillance program, which was introduced in 2005. This emphasizes the importance of controlling the disease, from both a systemic and ocular perspective. In our study, all patients had good visual outcome following resolution, and most patients did not have any recurrences.

RF-UVE-122

TINU uveitis in adults: a case series*Arora R.**Salisbury District Hospital, Salisbury, United Kingdom*

Purpose: To study the clinicopathologic characteristics, treatment and outcomes of Tubulointerstitial nephritis and uveitis syndrome in adults in a District General Hospital.

Method: Prospective study of adult patients diagnosed with Biopsy proven TINU Nephritis and Uveitis. The Clinical ophthalmic presentation was correlated with systemic, laboratory, and renal histopathologic data.

Results: 3 patients (1 Female, 2 Males) were included in the study. Mean age of presentation was 61 years. All the patients had unilateral anterior uveitis and deterioration in general health at the time of presentation.

One patient progressed to intermediate Uveitis on topical steroids.

All the patients were started on oral steroids by the Nephrologist to prevent renal damage. There was no progression in any case after oral steroids were initiated.

Conclusion: This study suggests that oral corticosteroids are effective for the treatment of TINU syndrome's uveitis.

RF-PED-123

Surgical management of congenital dacryocystocele in 6 week old baby*Johnson M., O'Colmain U.**Dundee University and Medical School, Ophthalmology, Dundee, United Kingdom*

Purpose: To describe the indications and outcome of primary endonasal surgical management in 6 week old baby with congenital dacryocystocele.

Method: Case Review.

Results: We describe a patient with congenital dacryocystocele who rapidly deteriorated clinically from dacryocystitis to airway obstruction prompting surgical intervention. Clinical photographs, Magnetic Resonance Imaging and video recording of endonasal surgical procedure are available.

Conclusion: Congenital dacryocystocele is an uncommon presentation and therefore data exploring optimal surgical management is varied. Some studies have demonstrated that up to a third can be managed conservatively with

the majority requiring nasolacrimal probing with or without endonasal marsupialisation of the cyst. This case demonstrates, with radiological and video imaging, complete resolution of the dacrocystocele with endonasal surgical intervention alone. Thus eliminating any potential complications from nasolacrimal probing.

RF-PED-124

Next generation sequencing reveal accurate molecular diagnosis in patients with Leber congenital amaurosis in Koreans

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Purpose: Leber congenital amaurosis (LCA) is the most severe form of inherited retinal disorder, and invariably leads to blindness. To date, 24 genes have been found to be associated with LCA. We performed a massive parallel sequencing in 20 unrelated patients to investigate the genetic cause of LCA in Koreans.

Method: A total of 20 patients diagnosed with LCA were selected for investigation through a single institution. Mutations were detected using either a custom-designed target enrichment that permitted parallel analysis of 114 genes associated with infantile nystagmus syndrome by high-throughput, next-generation DNA sequencing (NGS) or commercially available Trusight One sequencing panel. Suspected pathogenic variants were confirmed by bi-directional Sanger sequencing in relevant probands and other affected family members.

Results: We identified mutated alleles that were highly likely to be causative in 13 of the 20 patients, achieving a 65% molecular diagnostic rate. Among the 13 patients, 1 had autosomal dominant disease and 12 had autosomal recessive disease. Five patients were found to have *NMNAT1* mutation, 3 had *RPGRIP1* mutation, 2 had *GUCY2D* mutation, 2 were *CEP290* mutation, 1 had *CRX* mutation. All 5 patients with *NMNAT1* mutation had macular-coloboma like degeneration in early infancy. We found no *NMNAT1* mutation in one patient with macular-coloboma like degeneration, which was considered as typical feature of *NMNAT1* mutation.

Conclusion: NGS methods can detect disease-causing genetic variants in 65% of consecutive patients referred for evaluation of LCA, and the *NMNAT1* mutations were relatively common. Therefore, NGS can be used to confirm molecular diagnosis in patients with LCA, but additional analysis such as copy number variation and bioinformatic adjustment is need to increase the yield.

RF-PED-125

Treatment of refractory amblyopia with the use of levodopa associated with full-time occlusion of the dominant eye

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Purpose: To evaluate the visual results of treatment with L-dopa associated to full occlusion of the dominating eye in patients with refractive amblyopia at Altino Ventura Foundation, Recife/PE.

Method: R Series of retrospective studycases of including 19 patients attended between January, 2010 and September, 2015 that were subject to treatment with Levodopa and Carbidopa on doses of 0,7mg/kg/day and proportion of 4:1, divided in three daily doses, during 5 weeks, combined to full occlusion

(24 hours a day) of the dominating eye. We collected from medical record data the ophthalmologic exam of previous consultation to treatment, and after 8 weeks of therapy. Patients who have completed treatment for over 12 months were reconvened to complete eye examination.

Results: The average age of the patients before treatment with levodopa was $14,3 \pm 4,9$ years old (variation from 9 to 29 years). The visual acuity (Snellen) of the amblyopic eye before treatment was $0,24 \pm 0,16$, after 8 weeks of treatment was $0,47 \pm 0,33$, and final evaluation was $0,47 \pm 0,33$. There was a statistically significant improvement in vision after 8 weeks of therapy that was maintained until the final evaluation ($p=0,007$).

Conclusion: The visual acuity results after the use of Levodopa/Carbidopa during 5 weeks associated to full occlusion of the dominating eye had a significant improvement that hold up to 1 year after the treatment.

RF-PED-126

Surgical management of a young woman with type III Duane syndrome guided by dynamic mode MRI

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Purpose: We aim to report a case of type III Duane Syndrome (DS) with successful surgical management guided by dynamic mode MRI.

Methods: This is a case report of a patient who underwent full ophthalmic evaluation with dynamic mode MRI for surgical planning.

Results: A 29-year-old woman with type III DS affecting her left eye presented with abnormal head posture which was incompatible with her professional activity. Furthermore, unaesthetic downward deviation and retraction of the globe with palpebral fissure narrowing on attempted adduction was present. Forced duction test was positive. Hirschberg and cover test revealed an exotropia in primary gaze position (PGP). Dynamic mode MRI revealed a contracted lateral rectus. Medial, lateral and inferior rectus showed simultaneous contraction on attempted adduction. Surgery was provided aiming to enhance primary gaze alignment, reduce the downward deviation and diminish retraction of the globe. Retroinsertion (7 mm) and splitting (4 mm) of the lateral rectus with a broad base reinsertion of the affected eye was carried out. After surgery patient became orthophoric in PGP with no downshoot movements. All pre-operative objectives were satisfied and patient complaints declined.

Conclusion: A personalized approach is mandatory in the surgical management of Duane Syndrome. This case report showed that dynamic mode MRI is an extremely useful tool in pre-operative assessment of type III Duane Syndrome with a more accurate surgical outcome.

RAPID FIRE PRESENTATIONS
RF03: Retina

RF-RET-129

Aflibercept for myopic choroidal neovascularization in patients with prior treatment with bevacizumab

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Purpose: To evaluate the anatomical and visual outcomes of aflibercept in patients with myopic choroidal neovascularization (CNV) previously treated with bevacizumab.

Method: Single center observational case series of patients with CNV secondary to pathologic myopia previously treated with one injection of bevacizumab followed by a *pro re nata* (PRN) regimen before switching to aflibercept. Full ophthalmic examination, best corrected visual acuity (BCVA) and Optical Coherence Tomography (OCT) were evaluated at each visit. Fluorescein angiography was performed at baseline and whenever neovascular activity was suspected. Switching criteria during PRN treatment were *de novo* retinal hemorrhage, *de novo* significant metamorphopsia, visual loss of ≥ 5 ETDRS letters, any fluid on OCT or leakage on fluorescein angiography.

Results: In total, 8 eyes from 8 patients of mean age of $53 \pm 9,9$ years were included. Most of the subjects were female (87,5%). Mean number of bevacizumab injections before switching to aflibercept was 5.6, mean time until switch of 18 months, and the mean number of aflibercept injections after switching was 4.4, mean follow-up 11 months. Mean central retinal thickness (CRT) was $357.25 \pm 71.17 \mu\text{m}$ at the beginning of bevacizumab treatment and decrease to $305.25 \pm 29.87 \mu\text{m}$ immediately prior to the switch ($P=0.148$). After switching to aflibercept, at the last visit, the mean CRT significantly decrease to $257.75 \pm 20.87 \mu\text{m}$ ($P=0.0078$ compared to before the switch). By the time switch to aflibercept was made intraretinal cysts were present in all cases, subretinal fluid in 38% and decrease in visual acuity was present in 25% of patients. BCVA improved from $41,3 \pm 21,2$ ETDRS letters at baseline to $43,5 \pm 20,4$ letters just prior to the switch ($P>0,05$) and $48,8 \pm 24,3$ letters at the last visit ($P<0,05$ compared to baseline).

Conclusion: In eyes with myopic CNV and poor response to bevacizumab switching to aflibercept may further decrease macular thickness and improve visual acuity.

RF-RET-130

Switching from bevacizumab to aflibercept in neovascular age-related macular degeneration: clinical outcome and factors associated with poor response

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Purpose: The purpose of this study was to determine the characteristics of the patients with neovascular age-related macular degeneration (nAMD) who had a suboptimal response to aflibercept (Eylea®, Bayer) treatment after switching from bevacizumab (Avastin®, Roche).

Methods: Retrospective study with 24 eyes (n=24) of 20 patients with nAMD who were initially treated with bevacizumab injections (three monthly injections + Treat and Extend thereafter) and switched to aflibercept between

January 2013 to January 2016 due to insufficient response. Best corrected visual acuity (BCVA) and central macular thickness (CMT) were assessed before starting therapy with bevacizumab, at the time of switch and, ultimately, at 6 months and 1 year after switching therapy. Morphological features on spectral-domain optical coherence tomography (sd-OCT) were also analyzed. Those patients who did improve vision after switching were compared to patients who maintained or lost vision. Demographic data, BCVA, CMT and other imaging features were analyzed using univariate and multivariate statistics. Treatment intervals before and after switch were also compared.

Results: The study included 20 patients with a mean age of $81 \pm 6,6$ years. After switching bevacizumab to aflibercept, the median BCVA improved 4 letters ETDRS ($P=0,38$) and the median CMT decreased $60 \mu\text{m}$ at the end of the follow-up ($P=0,03$). 8 eyes registered an improvement in vision of at least 5 letters ETDRS (responders) and 16 eyes maintained or decreased at least 5 letters ETDRS (nonresponders).

In the multivariate regression model, the only factor significantly associated with a poor response to aflibercept was low BCVA registered before switch ($P=0,05$).

Conclusion: Some patients who don't respond to bevacizumab may respond to aflibercept. Low BCVA at the time of switching therapy to aflibercept is an indicator of poor response.

RF-RET-131

Changes in the count, area, and volume of drusen in the fellow eye in patients with neovascular AMD

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Purpose: To assess the rate of progression from early and intermediate stage to wet age-related macular degeneration (AMD) in the fellow eyes of patients with wet AMD in one eye by comparing the changes in drusen count, area and volume over two years of follow up.

Methods: Drusen count, area and volume measurements were obtained retrospectively at baseline, year 1 and year 2, by analysing spectral domain optical coherence tomography (SD-OCT) images (Topcon 3D OCT-1000 machine) using the in-built drusen software.

Results: Two hundred forty-eight patients who had wet AMD in only one eye were followed up for two years. 179 eyes did not progress to wet AMD (group 1) while 69 eyes have progressed to wet AMD (group 2) at the end of 2 years follow up. Mean drusen cube root volumes and drusen square root areas increased significantly in group 2 in the 2nd year by 0.05 mm ($P = 0.019$) and 0.19 mm ($P = 0.027$) respectively. However, the change rate between the 2 groups in the 1st year was not statistically significant. Furthermore, each 0.1 mm increase in the cubed root of baseline drusen volume increases the odds of progressing to CNV by 6.028 times (95% CI 2.556,14.218; $P < 0.001$).

Conclusion: There was a significant change in drusen area and volume in eyes with early or intermediate AMD a year before conversion to wet AMD. Drusen volume was confirmed as a sensitive predictor of developing CNV in eyes with AMD.

RF-RET-132

Intravitreal Bevacizumab for vitreous hemorrhage in proliferative diabetic retinopathy - 1 year results*Palarie N.¹, Pasenco T.²**¹International Clinic, Department of Ophthalmology, Orhei, Moldova, Republic of, ²State University of Medicine and Pharmacy 'Nicolae Testemitanu', Department of Ophthalmology, Chisinau, Moldova, Republic of*

Proliferative diabetic retinopathy (PDR) is a significant cause of blindness in working-age individuals. Until recently, waiting for the hemorrhage to spontaneously resolve or performing pars plana vitrectomy were the only lines of treatment for vitreous hemorrhage due to this condition.

Purpose: To evaluate the efficacy of intravitreal Bevacizumab (IVB) in dense vitreous hemorrhages (VH) due to PDR.

Method: Sixty-seven eyes of 57 person aged 54-78 with dense VH (+++, +++) were included in this study. All patients had type 2 diabetes. Complete ophthalmic examination and ocular ultrasonography were performed at baseline and 1, 6, and 12 weeks and 3, 6, 9 and 12 months after the first injection. Patients were divided into 3 groups according to the duration of VH. Group I included patients with VH less than 6 months (28 eyes), group II included patients with VH occurred 6-12 months ago (22 eyes), in group III were assigned patients with VH occurred more than 1 year ago (17 eyes). All patients once a month received 3 consecutive IVB 1,25 mg injections.

Results: All patients in the group I had complete resolution of VH. In the group II 5 eyes (22%) did not respond to IVB. In the group III 6 eyes did not respond to IVB (35%).

Conclusion: Intravitreal Bevacizumab is very effective in resolving even long lasting dense vitreous hemorrhages in patients with PDR, although its efficacy diminishes when duration of hemorrhage is greater than 1 year.

RF-RET-133

Ozurdex in retinal vein occlusion: outcome in the real world clinical setting*Seow E.**University Hospital of Wales, Ophthalmology Department, Caerdydd, United Kingdom*

Purpose: Ozurdex (Dexamethasone implant) has been approved for use in treatment of macular oedema due to retinal vein occlusion. Outcomes in trial settings may not reflect real world situations. Here we present data from our population on patient characteristic and outcomes for Ozurdex in macular oedema due to retinal vein occlusion.

Method: Retrospective case note review of patients who received Ozurdex implant for retinal vein occlusion between October 2012 and September 2013. Data on baseline characteristic, 3 month follow up data and complications were collected and compared to trial data (GENEVA).

Result: 29 patients were included. 10 patients had central retinal vein occlusion and 19 patients had branch retinal vein occlusion. 38.7% of patients had previous laser and 19.3% had previous Bevacizumab.

The duration between vein occlusion and treatment is less than 90 days in 19.3% of patients and more than 270 days in 64.5%. At 90 days 22% of patients had 15 letter gain while 12.9% had 15 letter loss.

The most common complication is raised intraocular pressures, with 1 patient requiring oral Acetazolamide. 14 patients required further treatment, with 9 patients listed for repeat Ozurdex, 4 patients listed for further macular laser and 1 patient listed for intravitreal Ranibizumab.

Conclusion: In our population patients had a longer duration between vein occlusion and treatment, as well as more prior treatment compared to trial patients.

This is reflected in our visual acuity outcomes where a higher percentage had 15 letter loss (12.9% vs 4%) and a lower percentage had 15 letter gain (22% vs 27.3%).

RF-RET-134

Long term follow-up of intravitreal anti Vascular Endothelial Growth Factor (VEGF) for the treatment of choroidal neovascularization secondary to angioid streaks*Abreu A.C., Monteiro S., Macedo M., Furtado M.J., Lume M., Meireles A.**Centro Hospitalar e Universitário do Porto, Porto, Portugal*

Purpose: To analyse the efficacy and safety of anti-Vascular Endothelial Growth Factor (VEGF) agents as treatment for choroidal neovascularization (CNV) in patients with Angioid Streaks.

Method: Retrospective chart review of eyes with CNV secondary to Angioid Streaks treated with intravitreal anti-VEGF drugs with a follow-up period superior to 12 months. Best-corrected visual acuity (BCVA) and macular thickness measured by optical coherence tomography were evaluated at baseline and at the end of follow-up. Fluorescein angiography was performed at baseline and as needed during treatment.

Results: 8 eyes (7 patients), with mean age of 60 years old, were included in this study. Three patients had Pseudoxanthoma Elasticum. Three eyes had subfoveal CNV, 3 had juxtafoveal, and 2 eyes had extrafoveal CNV. These patients were treated with a Pro Re Nata regimen of intravitreal anti-VEGF injections: mean of 8.5 injections, for, on average, 28.5 months (range from 12-56). Five eyes were treated with only one drug. In 2 eyes previously treated in another Hospital (one eye with Ranibizumab and the other one with Aflibercept), therapy was switched to Bevacizumab. These 2 eyes had inactive CNV at the end of follow-up. In one eye, after persistent intraretinal and subretinal fluid on the OCT despite prior monthly intravitreal Bevacizumab injections, therapy was switched to intravitreal Ranibizumab with good morphological and functional response after 2 monthly injections. At the end of follow-up, BCVA stabilized or improved in 6 eyes; central retinal thickness stabilized or decreased in 7; 3 eyes still had active CNV. No adverse events were noted.

Conclusion: Intravitreal anti-VEGF drugs are safe and effective in improving or stabilizing vision and lesion morphology in patients with CNV secondary to Angioid Streaks.

RF-RET-135

Macular edema secondary to retinal vein occlusions after switching to aflibercept: 12 month clinical outcomes and predictive factors*Lages V., Malheiro L., Coelho J., Abreu C., Monteiro S., Macedo M., Furtado M.J., Lume M.**Centro Hospitalar e Universitário do Porto, Porto, Portugal*

Purpose: To evaluate the efficacy and safety of switching therapy to aflibercept for the treatment of macular edema secondary to retinal vein occlusion (RVO) and to determine predictive factors associated to functional improvement.

Method: Retrospective consecutive case series of seventeen eyes (n=17) of seventeen patients with macular edema secondary to RVO (Branch n=11; Central n=6) who didn't respond to their original anti-VEGF therapy (bevacizumab and ranibizumab) and therefore were switched to aflibercept. Patients were classified as nonresponders when visual acuity did not improve 5 letters or more or central retinal thickness (CRT) did not decrease more than 10% after at least 3 monthly injections.

Demographic data, phakic status, best-corrected visual acuity (BCVA), CRT, morphological evaluation of optical coherence tomography (OCT), ischemic status on fluorescein angiography were evaluated prior to switching to aflibercept (baseline) to assess their predictive value in functional improvement at 12 months after the therapeutic switch.

Secondary outcomes included the change in BCVA and CRT at baseline, 6 and 12 months after the therapeutic switch.

Results: Mean BCVA increased from 53 letters (ETDRS) at baseline to 59 letters at 6 months (p=0,1) and to 61 letters at 12 months (p<0,05) following the switch to aflibercept. CRT values decreased from 423µm to 320µm (p< 0,05) at 6 months and to 311µm at 12 months (p<0,05) after the switch. Multiple regression analysis confirmed the following baseline predictive factors for functional improvement at 12 months after the therapeutic switch: female gender, younger age, pseudophakic eyes, better pre-switch BCVA and absence of DRIL on OCT.

Conclusion: Our study showed that switching therapy to aflibercept in non-responders improved vision. Gender, age, phakic status, baseline BCVA and the presence of DRIL on baseline OCT were prognostic factors for visual improvement.

RF-RET-136

Outcomes from the treatment of retinal vein occlusion with anti VEGF in South-East Scotland

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Purpose: Clinical trials have shown that anti-vascular endothelial growth factor (anti-VEGF) therapy can restore anatomical structure and preserve vision in patients with retinal vein occlusion (RVO). We aim to investigate the long-term real-world outcomes of anti-VEGF therapy in a cohort of RVO patients in south-east Scotland.

Method: Patients were identified from a clinic register of an RVO clinic from November 2014 to June 2015. The primary outcome measure was best-corrected visual acuity (BCVA) at latest follow up. The secondary outcome measure was central retinal thickness (CRT) at latest follow up. A logistic regression was performed to identify factors predicting change in BCVA and CRT following treatment.

Results: 72 eyes of 68 patients were included. The mean age of patients was 68.9 (range 43-92) years and eyes were treated with an average of 6.8 (SD 4.2) injections.

There was no significant change in BCVA between latest follow up and baseline (p=0.8300). The mean CRT was significantly reduced at latest follow up when compared with baseline (p<0.001). In branch retinal vein occlusions (BRVOs), we found that higher baseline CRT, logMAR BCVA and cholesterol, as well as shorter times from symptom onset to referral, first clinic to first injection and last injection of first treatment to latest follow up predicted a greater improvement in BCVA.

In central retinal vein occlusion (CRVO), non-smoking, lower final LogMAR BCVA and smaller CRT were linked with greater improvements in BCVA. In both BRVO and CRVO, higher baseline CRT predicted a greater reduction in mean CRT.

Conclusion: Anti-VEGF therapy was found to successfully improve anatomical derangements following RVO. However, visual function as measured by BCVA does not improve but does stabilise with anti-VEGF therapy. This study also adds to evidence supporting the link between early treatment with anti-VEGF therapy and improved visual outcomes.

RF-RET-137

Grafted c-kit⁺/SSEA1⁻ eye-wall progenitor cells delay retinal degeneration in mice by regulating neural plasticity and forming new graft-to-host synapses

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Purpose: The major obstacles to clinical translation of stem cell-based cell therapy in retinal degeneration (RD) remain the difficulty of obtaining sufficient quantities of appropriate donor cells and the poor integration of grafted cells into the remaining retinal circuitry. Here, we investigated if purified cells expressing c-kit as a surface marker had potential future applications for the treatment of RD.

Method: Eye-wall c-kit⁺/SSEA1⁻ cells were isolated via fluorescence-activated cell sorting, and their self-renewal and differentiation potential were detected by immunocytochemistry and flow cytometry *in vitro*. After transplantation into the subretinal space of rd1 RD mice, differentiation and synapse formation by daughter cells of the c-kit⁺/SSEA1⁻ cells were evaluated by immunocytochemistry and western blotting. Retinal function of rd1 mice that received cell grafts was tested via flash-electroretinograms and the light/dark transition test.

Results: Eye-wall c-kit⁺/SSEA1⁻ cells were self-renewing, clonogenic, and capable of differentiating into multiple retinal cell types including neurons, Müller cells and retinal pigment epithelium cells and of transdifferentiating into smooth muscle cells and endothelial cells *in vitro*.

The levels of synaptophysin and postsynaptic density-95 in the retinas of c-kit⁺/SSEA1⁻ cell-transplanted rd1 mice were significantly increased. The c-kit⁺/SSEA1⁻ cells were capable of differentiating into functional photoreceptors that formed new synaptic connections with recipient retinas. And also transplantation partially corrected the abnormalities of inner retina of rd1 mice. The rd1 mice that received transplantation showed significant increases in a-wave and b-wave amplitude and the percentage of time spent in the dark area.

Conclusion: Grafted c-kit⁺/SSEA1⁻ cells restored the retinal function of rd1 mice via regulating neural plasticity and forming new graft-to-host synapses.

RF-RET-138

Parafoveal cone photoreceptor mosaic metrics in healthy adults using different sizes of sampling window in adaptive optics retinal camera

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Purpose: To assess the influence of the size of the sampling window in flood-illumination adaptive optics retinal camera on results of cones measurements in eyes of healthy individuals. To investigate the differences in cone density and spacing in different quadrants of retina.

Method: Thirty three subjects with no ophthalmic or systemic diseases underwent complex ophthalmological examination. Photos of retinal fragments 3 degrees from the fovea were taken using RTx-1 Adaptive Optics Retinal Camera. We used 3 sampling window sizes: 50/50, 100/100 and 250/250 (pixels). Cone density, spacing and shape was determined using AOdetect software (v0.1, Imagine Eyes, Orsay, France). Statistical analysis were performed with SPSS software (IBM Corp. Released 2013. IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp), a P value of < 0.05 was considered significant.

Results: Mean cone density (DM) was 19453±3643 (M±SD) cells/mm². There was statistically significant difference between cone density measurements taken with 50/50 and 250/250 windows. Cone spacing median (SM) was 7,90±0,97 (M±IQR) and the results did not differ significantly between any of the windows examined. However, both the DM and SM differed significantly according to location between superior and temporal quadrants. The most common cone shape was hexagonal for all window sizes and locations (47,6%).

Conclusion: Our work may help in the development of normative database of individual variations of cone mosaic in healthy subjects. It allows also to choose the best window to achieve the most correct values for the 3 degrees eccentricity measurements. In our study it is sampling window size of 100/100 pixels.

RF-RET-139

Probability of intraocular pressure elevation in glaucoma and ocular hypertension eyes treated with the intravitreal dexamethasone implant (Ozurdex®)

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Purpose: To evaluate the probability of intraocular pressure (IOP) elevation in glaucoma and ocular hypertension (OHT) eyes compared to normal eyes in eyes treated with the intravitreal dexamethasone implant (Ozurdex®) for several conditions in routine clinical care.

Method: Retrospective, two center, consecutive case series of 705 Ozurdex implants injected in 438 eyes (403 patients). Subgroup analysis was performed to evaluate the probability of IOP elevation in glaucoma, OHT and normal eyes. The proportion of eyes on hypotensive treatment at baseline, cumulative probability of IOP-lowering treatment and glaucoma surgery were evaluated.

Results: At baseline, 8.8% of study eyes had glaucoma, 6.7% OHT and 16.9% were already on hypotensive topical treatment. Kaplan-Meier survival curves were constructed to evaluate the time to different IOP levels after first in-

jection. The cumulative probability for normal, OHT and glaucoma eyes of having an IOP level of: A) ≥ 21 mmHg was 35.3%, 59.8% and 49.1% at 3 months, 46.3%, 75% and 65.1% at 12 months, and 57.8%, 75% and 65.1% at 24 months, B) ≥ 25 mmHg was 16.7%, 14.2%, and 16.3% at 3 months, 24.6%, 28% and 22.3% at 12 months, and 30.2%, 28% and 22.3% at 24 months, and C) ≥ 35 mmHg was 4.3%, 7.1%, and 0% at 3 months, and 6.0%, 7.1% and 3.7% at 12 and 24 months. The cumulative probability of starting topical treatment for treatment-free eyes at baseline was 10.8% at 1 month, 18.5% at 2 months, 23.7% at 6 months, 30.4% at 12 months, and 53.1% at 24 months. Glaucoma surgery was required in 0.91% of study eyes (4/438).

Conclusion: OHT and glaucoma eyes showed higher probability of mild IOP elevation (≥ 21 mmHg) than normals, however the probability of moderate (≥ 25 mmHg) or high (≥ 35 mmHg) IOP elevations is similar in the short and long term. The percentage of eyes which require glaucoma surgery is very low (< 1%) and consistent with the literature.

RF-RET-141

Vitrectomy for idiopathic macular hole: outcomes and complications

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Purpose: The aim of this study was to determine the anatomical closure rate together with the rate of functional success of idiopathic macular holes following vitreous surgery in different optical coherence tomography (OCT) stages.

Patients and methods: This was a prospective, case series, interventional study. Twenty-two eyes were enrolled in this study conducted at Mansoura University Ophthalmic Center during the period between June 2012 and December 2014 with at least 3 months of follow-up. Eyes with stage 2, 3, and 4 idiopathic macular hole according to the Gass classification were included. All eyes were subjected to 23-G pars plana vitrectomy, inner limiting membrane peeling, fluid-gas exchange, and postoperative positioning.

Results: Idiopathic macular hole closure was achievable in 18 of 22 cases, with overall 81.4% anatomical success. Type 1 closure (U-shaped closure) was achieved in 13 cases (59.1%), type 2 closure (V-shaped closure) in three cases (13.6%), type 3 closure (irregular closure) in one case (4.5%), and type 4 closure was reported in one case (4.5%). The median postoperative log MAR visual acuity at 3 months was 1.0 (0.9445-1.2073). The overall postoperative visual acuity improvement was strongly statistically significant ($P = 0.000$). The visual acuity improvement at 3 months compared with the preoperative visual acuity was statistically significant ($P = 0.000$). The delta change in log MAR visual acuity at 3 months was 0.5 (-0.7782 to -0.4331), with greater improvement in log MAR visual acuity in group I (stage 2 OCT) compared with group III (stage 3 and 4 OCT at 3 months; $P = 0.05$). Retinal breaks were observed intraoperatively in three cases. Retinal detachment was reported in one case 4 months postoperatively.

Conclusion: Macular hole closure rate and visual acuity markedly improved following vitreous surgery for idiopathic macular holes.

Keywords: Inner limiting membrane peeling, macular hole, vitrectomy

RF-RET-142

The outcomes of pediatric vitreoretinal procedures in an academic centerShildkrot Y.E.*University of Virginia, Department of Ophthalmology, Charlottesville, United States***Purpose:** To evaluate the indications for pediatric vitreoretinal procedures and their outcomes in a small pediatric volume tertiary referral academic center**Method:** Retrospective chart review of vitreoretinal surgeries performed in patients 16 years of age or younger between 6/1999 and 11/2015. The study was IRB approved**Results:** Pediatric vitrectomies accounted for 41/4812 (0.85%) of all vitreoretinal surgeries performed in the period studied. 23/38 patients were boys (60.5%). Median age was 7.12 years (range 1.6 months to 16 years). Both eyes required surgery in 3 boys. Left eyes were more commonly involved 22, 53.7%. Median follow-up was 1.24 years. Retinal detachment accounted for 27 cases (65.9%), Vitreous hemorrhage was seen in 7 eyes (4 with non-accidental trauma). History of globe trauma was present in 13 eyes (31.7%). Vitrectomy was the most common procedure in 31 (75.6%) of eyes. Overall, 31 eyes (75.6%) were attached at the last follow-up. 2 eyes with history of trauma detached 5 and 7 years after the initial vitrectomy and both were irreparable at the time of the detachment. History of globe trauma ($p=0.035$) and NOT the presence of detachment (0.44) at the initial surgery was most predictive of ultimate irreparable detachment. Age at the time of the surgery, gender, and presence of vitreous hemorrhage did not significantly correlate with ultimate detachment ($p>0.05$). Overall, 15 (36%) of eyes achieved 20/80 or better vision and 8 (14%) were 20/40 or better at the last visit. 15 (36%) of eyes had Hand motions or worse vision. The strongest predictive factor for poor vision PVR at diagnosis ($p=0.0036$).**Conclusion:** Pediatric vitreoretinal procedures are associated with increased risk of vision loss and retinal detachment even when the retina is attached at baseline.

RAPID FIRE PRESENTATIONS

RF04: Cataract, Cornea, External Eye, Refractive Surgery

RF-REF-143

(UN)SAFETY of a hydrogel corneal inlay to correct presbyopia: 5-year follow upOliveira M.¹, Martins A.¹, Gil P.¹, Rosa A.^{1,2}, Quadrado M.J.^{1,2}, Neto Murta J.^{1,2}¹Centro Hospitalar e Universitário de Coimbra, Ophthalmology, Coimbra, Portugal, ²Faculdade de Medicina da Universidade de Coimbra, Coimbra, Portugal**Purpose:** To evaluate the long-term safety and efficacy of hydrogel corneal implant Raindrop® for the treatment of presbyopia.**Method:** Retrospective study of cases of presbyopic eyes undergoing insertion of a hydrogel corneal implant (Raindrop®) in the non-dominant eye. Clinical information was collected, including visual acuity, follow-up time, surgery interventions, biomicroscopy and corneal topography.**Results:** Six eyes of 6 patients previously submitted to hydrogel intracorneal implant (Raindrop®) were included. Three implants were explanted due to low visual acuity, secondary to the presence of corneal haze, associated with the

implant. In one case there was melting of the cornea above the implant, followed by its exposure, despite the long time since its implantation (5 years). The presence of corneal haze occurred in 6 patients, ranging from moderate to severe. The minimum follow-up period was 2 years and the maximum was 5 years.

Conclusion: This is the first study in patients with the hydrogel corneal implant Raindrop® with minimum follow-up of 2 years. Our results show that this implant, approved by FDA this year, has a poor long-term safety profile due to the presence of corneal haze and melting, with the consequent need to explant a large number of devices.

RF-REF-144

A unique femto cataract complication - a case reportDaniel Raj Ponniah L.R.*DR Agarwals Eye Hospitals, Dept of Cornea & Refractive Surgery, Tirunelveli, India*

A 65 year old female, diabetic with grade IV nuclear cataract & a semi dilated pupil (diabetic pupillopathy), underwent femto assisted cataract procedure. After conventional docking, pupil autorecognition was successful (a false recognition of reflected artifacts) and a 5,25 mm capsulorhexis was initiated; during which more than 180° of iris was caught within rhexis, resulting in lasers on the surface of iris parallel to pupil, further leading to irritative miosis. How further femto nucleolysis, a successful phacoemulsification including a good capsulotomy could be completed amidst miosis would be video presented. Postoperatively regained a good vision will permanent marks of femto lasers on the iris.

Tips for early recognition of such complication and ways to avoid will be discussed as a video based course.

RF-EXT-145

Innovative method for the treatment of demodex induced blepharoconjunctivitisSaralidze T.¹, Ramazashvili M.¹, Cercvadze N.¹, Khurtsilava T.²¹IQ Clinic, Ophthalmology, Tbilisi, Georgia, ²IQ Clinic, Tbilisi, Georgia**Purpose:** Because of Demodex induced blepharoconjunctivitis treatment is less effective and relapses are frequent because of that lots of patients applied for help to our clinic. So we decided to create a combined method of treatment, which included a few proven methods from other countries. In addition this procedure should have been comfortable for the patients.**Method:** Patients were selected according of the process severity and if they wish to.

The study involved 80 patients 20 to 80 years, total-160 eyes. The diagnosis was recovered eyelash examination under a microscope.

The results of the analysis were on the screen of the computer in front of patients and patients were fully informed about its possible injuries. Symptoms of patients: itchy eyes and eyebrows, burning eyes, in 50%-the loss of eyelashes and eyebrows.

The following criteria were evaluated:

1. Eyelash follicles hyperplasia and keratinization
2. Meibomian glands dysfunction
3. Corneal condition and tear film stability with fluorescein test
4. Assessment of Eye dryness rate with shirmer's test
5. Assessment of Conjunctival and eyelid hyperemia quality

In-patient treatment includes treatment at the clinic for 10 days:

1. Blephasteam-Thea brand-usage 10-15 mins. It unblocks the Meibomian glands
2. Darsnval-Immobilization of Demodex with for 3-5 mins
3. Squash massage of the edges of the eyelids for 3-5 mins
4. The application of tea tree oil for 10 minutes. 100% tea tree oil is mixed with Optigel 3:10
5. App of demoxoft lipogel for 15 mins
6. Installing lubricant eye drops.

Outpatient treatment: Hygiene of eyelids with anti-demodex soap. Anti-demodex lotion should be applied on eyelids and eyebrows everyday during two months.

Results: In 80% of patients reached full recovery, in 20% it was necessary to repeat the treatment in 6 months. Remission lasted for three years.

Conclusion: This way of treatment is an effective method for patients with Demodex induced blepharoconjunctivitis.

RF-COR-146

Fungal keratitis: retrospective study about 27 cases

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Purpose: Fungal keratitis is a serious condition, occurring most often on fragile corneas. The aim of our study was to study the epidemiological, diagnostic, therapeutic and prognostic aspects of fungal keratitis in our Moroccan context.

Method: This is a retrospective study carried out at the ophthalmology department A of the Ibn Sina University hospital in Rabat, between October 2014 and October 2016, which included all consecutive patients hospitalized for fungal keratitis.

Results: We found 27 patients hospitalized for fungal keratitis. Ocular trauma and local corticosteroid therapy were found in 37% and 44.4% of patients respectively. The mean time between the first clinical signs and the emergency department consultation was 21 days, and 66.7% of the patients were referred for non-improvement with antibiotic eye drops. The initial visual acuity ranged from 2/10th to no luminous perception. All patients received corneal scratching upon admission for diagnostic and therapeutic use. It confirmed the clinical suspicion of fungal keratitis in 51.9% of the cases.

The evolution was marked by the occurrence of corneal perforation in 37% of patients, the persistence of a corneal opacity in 88.9% of the cases. An improvement in visual acuity was observed in 12 of our patients.

Conclusion: Fungal keratitis are severe infections of the cornea. Diagnosis is based on the identification of risk factors and particular clinical signs. Early diagnosis and an adequate therapeutic strategy are important to avoid the occurrence of complications, especially blindness.

RF-COR-147

Indications and outcomes in corneal grafting and intraocular lens opacification after DSAEK

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Purpose: Corneal graft surgery is changing rapidly. We aimed to evaluate indications for grafting, the procedures carried out, and outcomes including complications. The rate of intraocular lens opacification with Descemet's stripping automated endothelial keratoplasty (DSAEK) is described, for the first time, in an Irish cohort.

Methods: A retrospective review of the case notes of all patients who underwent corneal grafting under the care of a single surgeon, from 2008 to 2015 was carried out. The risk factors for graft complications including graft failure, defined as oedema, scarring or requirement for repeat grafting, and intraocular opacification in DSAEK were examined.

Results: Over the eight year period studied, forty two corneal graft surgeries were carried out on 40 eyes of 38 patients, 24 of whom were male (63%). The median age at transplant was 62 years (range 23-96 years). The most common indication for grafting was pseudophakic corneal decompensation associated with Fuch's Endothelial Dystrophy (FED, n=13), followed by keratoconus (n = 6). Seventeen penetrating keratoplasties, 15 DSEK, 8 anterior lamellar keratoplasty (ALK), and two amniotic membrane grafts were performed. Graft failure resulting in corneal oedema or necessitating repeat corneal transplant surgery (n=4, 10%), was associated with previous graft failure in the eye, odds ratio (OR) = 1.58 (P = 0.05), and with FED, OR = 1.50 (p = 0.02). Opacification of an intraocular lens was observed in one intraocular lens post DSEK, giving an incidence rate of 7% in the cohort.

Conclusion: Pseudophakic corneal decompensation is the commonest indication for corneal transplant surgery, and lamellar techniques have overtaken penetrating keratoplasty as the most common approach to corneal transplant surgery in our cohort. Previous corneal corneal transplant failure and Fuch's dystrophy remain significant risk factors for failure. The risk of intraocular lens opacification and its potential effects on vision should be evaluated prior to endothelial keratoplasty.

RF-COR-148

Multiparametric analysis of keratoconus morphology according to RETICS classification

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Purpose: To investigate and perform a corneal model characterization in order to establish a new criterion for distinguishing clinical diagnosis and possible differences between healthy and keratoconic corneas using multiparametric analysis of the morphology.

Method: This was a retrospective case series study evaluating a sample of 151 patients (36.11 ± 12.21 years) divided into five groups according to a visual acuity grading scheme: 91 healthy eyes, 29 grade I, 19 grade II, 7 grade III and 5 grade IV and PLUS. Parametric morphology was defined through-out a geometrical custom modelling process using data from a point cloud obtained from a corneal topographer, and comparing measurements between both groups in order to analyse differences.

Data engagement scores were confirmed by means of the Kolmogorov-Smirnov test. A Kruskal-Wallis test was used to compare differences according to disease stages (RETICS, a visual acuity grading system). Pairwise comparisons were performed using Dunn's procedure with a Bonferroni correction.

Results: There were differences between groups in the following variables:

Anterior corneal surface area ($p < 0.000$),

Posterior corneal surface area ($p < 0.000$),

Sagittal plane apex area ($p < 0.000$),

Sagittal Plane Area in minimum thickness points ($p < 0.000$).

Conclusion: Due to corneal irregularity in keratoconus disease, a visual acuity variation could be observed according to the disease progression. Multiparametric analysis of the morphology allowed to differentiate between groups according to the RETICS grading scheme.

RF-COR-149

Femto modifies keratoconic eyes & the intra corneal lenticular transplantation (Stromal Augmentation Technique) - an effective alternative to DALK

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Purpose: To compare the 6 months outcome of Intra Stromal Lenticular Transplantation, as an alternative to DALK, in advanced non scarred keratoconic corneas, in an era of redefined corneal therapeutics by femto lasers.

Method: Femto assisted donor corneal stromal lenticule (140-200 mic., 7.5-8.5mm in dia) is fashioned, and a bed is created intrastromally with 2 incisions 180° apart in the keratoconic eye, through which the donor lenticule is transplanted for a stromal augmentation.

Results: 15 eyes of Stromal Augmentation compared with 15 eyes of DALK Stromal augmentation and DALK improves vision by 4 lines & 2 lines respectively.

Stromal augmentation and DALK increases central corneal thickness to normal range.

Stromal augmentation and DALK flattens keratoconus significantly.

DALK flattens anterior cornea more ($p = 0.178$), whereas Stromal augmentation flattens posterior cornea more ($p = 0.001$).

Stromal augmentation, DALK reverses irregular astigmatism ($p < 0.05$).

Post OP Superior /Inferior asymmetry is closer to an assumed acceptable difference of 2D in Stromal augmentation & DALK.

Conclusion: The outcome of Intra Stromal Lenticular Transplantation (Stromal Augmentation Technique), in terms of improvement in vision, flattening of cornea, increase in central/paracentral pachymetry (reversal of ectasias), and improvement in irregular astigmatism is comparable to DALK & no worse than DALK, without sacrifice of recipient tissue and suture related events in advanced non scarred keratoconic corneas.

RF-COR-150

Ethylene-diamine-tetra-acetic acid (EDTA) chelation for symptomatic band keratopathy: results and recurrence

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Purpose: To identify causes of symptomatic band keratopathy, and assess the results and long-term recurrence rates following chelation with topical ethylene-diamine-tetra-acetic acid (EDTA)

Method: A retrospective review of surgical logbooks identified patients managed by EDTA chelation for symptomatic band keratopathy between 2009-2015. Outcome measures included change in visual acuity at 1-month follow-up, rate and time to recurrence and time to repeat procedure

Results: We identified 106 cases; 89 were available for analysis. Most cases of band keratopathy were idiopathic (37.1%, 33/89). The most common underlying diagnosis was long-term topical glaucoma therapy (25.8%, 23/89) and cases following retinal surgery and chronic uveitis (7.9%, 7/89 respectively). The median presenting visual acuity was 6/18 (range 6/6-NPL) with the visual axis affected in 97.8% of cases. Treatment involved corneal epithelium removal, recurrent application of topical EDTA and mechanical debridement. The mean duration of the operation was 20 minutes (range 10-45). The Mean initial follow-up time was 38 days (range 8-114). At follow up, the visual axis was clear in 95.6%. Visual acuity was maintained or improved in 79.8%, with 13.5% improving by two lines or more. The mean length of follow-up was 562 days (median 326, range 22-1928). A total of 25 eyes (28.1%) showed localised recurrence of calcium with a mean time of 514 days (median 299, range 42-1832). Of those with recurrence, a total of 4 underwent repeat EDTA chelation with a mean time between operations was 414 days (median 430, range 105-694)

Conclusion: Chelation of calcium with topical EDTA is a safe and effective treatment for band keratopathy. Visual acuity improves in most eyes and while the rate of recurrence is moderate, the need for retreatment is low

RF-COR-151

Ocular risk of smart devices usage among our young population

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Purpose: The extensive usage of smart devices (SD), especially among new generations, has increased the ocular complaints such as eyestrain, redness and blurred vision, commonly known as computer vision syndrome. We aim to determine the prevalence and severity of ocular symptoms in relation to the usage of SD, among youth and school aged population.

Method: This cross-sectional questionnaire-based study involved 2190 participants aged between 7 and 30 years, who were randomly selected from 18 schools, 2 universities and from general population in Jeddah. Participants were interviewed about their habitual use of SD, their ophthalmological history and level of complaint regarding some predefined ocular symptoms. Based on the frequency scales of the latter symptoms, a score of severity was calculated and risk factors analyzed.

Results: 1841 of participants completed the questionnaire: 76.5% females and 23.5% males. The predominant category of age was 16-20 years (43.8%), with the highest frequency of severe ocular symptoms (15.9%), ($p < 0.001$).

Red and tired-eyes was the most commonly reported symptom (68.1%).

There was a gradual increase in symptoms severity with the intensity of usage of SD. A massive use (> 10 daily hours) is linked to 20.6% of severe symp-

toms, versus 3.1% only in minor use (<2 daily hours), ($p<0.001$). Beyond the frontier of 4 daily hours, the ocular risk almost quadruples: OR= 3.622, ($p<0.001$).

Conclusion: Intensive usage of smart devices exposes our young population to real ocular risk. We recommend not exceeding 4 daily hours, in order to significantly reduce this risk.

RF-CAT-152

Prolonged inflammation in post op cataract due to retained foreign bodies

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Purpose: To show that foreign bodies can cause prolonged post op inflammation in cataract patients.

Method: Case report of two cases with video.

Results: The protracted post op inflammation disappeared once the foreign bodies were removed.

Conclusion: Some cases of prolonged post op inflammation can be due to the retention of intraocular foreign bodies.

RF-CAT-153

Effect of capsular tension ring on the rotational stability of toric intraocular lens

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Purpose: To study the effect of co-implantation of Capsular Tension Rings (CTRs) on the rotational stability of toric Intra Ocular Lenses (IOLs).

Method: A prospective randomized controlled study on 36 adult human eyes with visually significant cataract and regular corneal astigmatism $\geq 1.5D$ was conducted at a tertiary care centre. The eyes were randomly divided into two groups of 18 each, group A and group B. The eyes in group A underwent standard phacoemulsification followed by implantation of a CTR and a toric IOL. In the eyes in group B, standard phacoemulsification and toric IOL implantation was done without a CTR.

Both the groups were called for follow up on day 1, 1 week, 1 month and 4 months postoperatively. The axis of the toric IOL on each visit was measured by slit lamp imaging in retroillumination and analysed digitally. Eyes with corneal pathology, lens subluxation and a specular microscopy endothelial cell count $< 2000/mm^2$ were excluded from the study.

Results: The mean rotation in Group A at the end of 4 months was found to be 1.32 ± 0.7 degrees while that in group B was 3.2 ± 1.08 degrees. Independent variable t-test demonstrates the difference to be statistically significant ($p<0.02$).

Conclusion: Co-implantation of a CTR is an effective technique for ensuring better rotational stability of toric IOLs.

RF-CAT-154

A new treatment option: clear lens extraction and multifocal IOL implantation for the resistant spasm of accommodation

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Purpose: To present a young adult with resistant spasm of accommodation without any organic cause treated with surgery.

Method: A 20-year-old man complained of frequent and dense blurry vision attacks after extended near work for last 5 years debilitating his social life and education was diagnosed with spasm of accommodation. Neurologic and psychiatric evaluation yielded any pathology and spasm of accommodation didn't respond to medical intervention.

Results: The patient had underwent bilateral phacoemulsification and multifocal IOL implantation surgery to pause the spasm of accommodation and rehabilitation of vision for far and near work. The patient's spasm of accommodation was resolved with cataract surgery and no spectacle correction was needed with multifocal IOL's.

Conclusion: Clear lens extraction with phacoemulsification and multifocal IOL implantation could be considered as definitive treatment for resistant spasm of accommodation.

RF-CAT-155

Acute hypertensive emergency following instillation of preoperative 2.5% phenylephrine and 1% cyclopentolate ophthalmic drops in a patient with autonomic insufficiency

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Purpose: To highlight the unique case of an acute hypertensive emergency following instillation of routine preoperative ophthalmic drops in a patient with a history of autonomic hypotension, and alpha blocker use who was pre-medicated with three days of topical 1% atropine.

Method: Case report.

Results: A seventy-one year old man with autonomic hypotension suffered an acute hypertensive emergency after instillation of three rounds of one drop each of 2.5% phenylephrine and 1% cyclopentolate, administered every five minutes for 15 minutes into his left eye. Prior studies have found that patient's with orthostatic hypotension can have an exaggerated response to lower concentrations of phenylephrine, and that pre-medicating patients with atropine can also potentiate systemic effects of topically applied phenylephrine. Our patient, having both autonomic hypotension and a history of alpha blocker use, fell in to both of the categories as he was pre-medicated with three times per day of 1% atropine for three days leading up to his surgery.

Conclusion: Autonomic insufficiency is a variable disease, and special care should be taken when approaching cataract surgery in this population, particularly in the setting of orthostatic hypotension. This is especially true in the case of patient's with concomitant alpha blocker use. Consideration should be made for using anti-cholinergics in combination with dilation devices such as iris hooks or a Malyugin ring, and abstaining from instilling sympathomimetics.

RF-CAT-156

Prevalence of cataract and pseudophakia and its impact on visual-related quality of life in 70-year-old personsZetterberg M.^{1,2}, Skoog I.³, Havstam Johansson L.^{1,2}¹University of Gothenburg, Institute of Neuroscience and Physiology, Department of Clinical Neuroscience, Gothenburg, Sweden,²Sahlgrenska University Hospital, Department of Ophthalmology, Mölndal, Sweden, ³University of Gothenburg, Institute of Neuroscience and Physiology, Department of Psychiatry and Neurochemistry, Gothenburg, Sweden**Purpose:** To determine the self-reported and actual prevalence of cataract and pseudophakia and its impact on visual-related quality of life in 70-year-old persons.**Methods:** A total of 1182 70-year old people from the H70 study completed the National Eye Institute Visual Function Questionnaire (NEI VFQ-25) and answered questions on previous cataract surgery and/or a diagnosis of cataract as reported from their ophthalmologist. A random subset of subjects from this cohort (n=561) were invited to an ophthalmologic examination including lens photography in a biomicroscope. Lens opacities were graded from the photos using the Lens Opacity Classification System (LOCSIII).**Results:** The prevalence of self-reported cataract in this cohort of 70-year-olds was 23.4% with 14.6% people stating that they had undergone cataract surgery. Persons who reported as having been diagnosed with cataract, but who had not been subjected to surgery, exhibited significantly lower scores on all NEI VFQ25 sub-scales except for driving and colour vision. The composite score was 88.14 (median; Interquartile Range [IQR] 77.71-94.77) for persons reporting having cataract and 94.1 (median; IQR 88.41-97.04, p<0.001) for those who reported not having cataract. Upon eye examination, 13.8% were pseudophakic in either eye and 9.6% in both eyes. The proportion of pseudophakic women (either eye) was 17.2% as compared to 9.8% in men (p=0.014). Pseudophakia in both eyes was evident in 12.8% of the women and in 6.1% of the men (p=0.009). Nuclear and posterior subcapsular opacities were slightly more common in women, p=0.034 and 0.010 respectively.**Conclusions:** In this cohort of 70-year-old people, the prevalence of pseudophakia agreed well with that found upon examination. Persons reporting a diagnosis of cataract had significantly lower scores on vision-related quality-of-life. Women have a higher prevalence of lens opacities and previous cataract surgery.RAPID FIRE PRESENTATIONS
RF05: Glaucoma, Retina

RF-GLA-157

Glaukos Istent - emerging 4 and 5 year data

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Purpose: To document the overall, and emerging 4 and 5 year data on our cohort of Istent patients.**Method:** Prospective single surgeon database.**Results:** 128 patients from 2010 to 2016 with primary open angle glaucoma or ocular hypertension underwent cataract surgery with implantation of the Glaukos Istent. All patients had one Istent implanted except 2 who had 2 im-

plants. Follow up examinations occurred at 1 week (n=124), 1 month (n=113), 3 months (n=89), 6 months (n=79), 1 year (n=68), 18 months (n=52), 2 years (n=46), 3 years (n=30) 4 years (n=18) and 5 years (n=2).

13 patients were subsequently excluded from the cohort as they were discharged with ocular hypertension that resolved (n=3), went on to have glaucoma surgery or laser (n=3) or were transferred to another locality/ deceased (n=3/4).

Baseline intraocular pressure in mmHg (IOP) was 20.5 and the average number of topical medications (TpM) was 1.8. Average IOP and TpM at follow up was as follows; 1 week - 17.8 / 1.4; 1 month - 16 / 1; 3 months - 15.6 / 1; 6 months - 15.6 / 0.9; 12 months - 15.8 / 0.8; 18 months - 16 / 0.9; 2 years - 15.8 / 0.7; 3 years - 15.8 / 0.8; 4 years - 16.8 / 1 and 5 years 16.5 / 2.

Three patients returned acutely within the first week with pain and were noted to have raised pressure. In all patients these the IOP subsequently settled to less than 18 within 2-4 weeks with treatment, however in a patient with hyphaema the Istent could not be located, long term, despite MRI scanning. One patient had a posteriorly rotated Istent with iris incarceration into the lumen; following YAG laser to the iris the opening was made patent.

Conclusion: The Glaukos Istent is a safe and effective intervention showing an average reduction of 18% in IOP combined with 44% less TpM at 4 years. 5 year data was also favourable however the numbers were small (n=2) and should be interpreted with caution with anticipation of future reports on this cohort.

RF-GLA-158

Endoscopic cyclophotocoagulation in the treatment of moderate to advanced chronic open-angle and angle-closure glaucomaWalek E.¹, Przeździecka-Dołyk J.^{1,2,3}, Helemejko I.¹, Helemejko M.¹, Misiuk-Hojto M.¹¹Wroclaw Medical University, Department of Ophthalmology, Wroclaw, Poland, ²Wroclaw University of Science and Technology, Department of Optics and Photonics, Wroclaw, Poland, ³University of Edinburgh, Deanery of Clinical Sciences, College of Medicine and Veterinary Medicine, Edinburgh, United Kingdom**Purpose:** To evaluate the long-term efficacy of endoscopic cyclophotocoagulation (ECP) on the reduction of intraocular pressure (IOP) and medication reliance in the treatment of moderate to advanced chronic open-angle (OAG) and angle-closure (ACG) glaucoma.**Method:** A prospective study of 39 eyes with moderate to advanced glaucoma (on maximal tolerable pharmacotherapy) that underwent ECP was performed. The groups were evenly matched (OAG n=22, ACG without angle opening during dynamic gonioscopy n=17) for baseline demographic and ocular characteristics. Patients were examined postoperatively within 1, 7, 30, 90, 180, 360 days of follow-up. Treatment failure was defined as less than 20% reduction in IOP from baseline on ≥ 1 visits (excluding the first day after surgery), IOP > 21 mmHg or any additional glaucoma surgery performed to control the disease.**Results:** Mean preoperative values of IOP and medication number were respectively 24 ± 8.9 mmHg and 5 ± 1.9 different substances. Mean values of IOP significantly lowered on day 7, 30, 90, 180 and 360 after surgery (16 ± 5.7 ; 18 ± 5.9 ; 16 ± 5.4 ; 15 ± 3.6 mmHg respectively; p<0,04). The decrease in number of used glaucoma medications was significant at each visit (3 ± 2.3 ; 3 ± 2.0 ; 2 ± 2.0 ; 2 ± 1.5 ; 2 ± 1.9 with p<0,004). With the Kaplan-Meier surviving method probability of a long-term effect of ECP on glaucoma control was estimated at the level of 75% after 12-month follow-up. No significant difference was found between OAG and ACG (p>0,05). Postoperative complications occurred predominantly on the first and seventh day after surgery (fibrin mem-

brane in 21% and 18% of cases respectively). The cellular response from anterior chamber peaked on day 1 with reduction on day 7 and significant resolution on day 30; $p=0,008$.

Conclusion: ECP effectively lowers IOP and results in the reduction of glaucoma medication usage up to 12 months regardless of the type of glaucoma. It is a safe surgery with a low rate of postoperative complications observed.

RF-GLA-159

Secondary glaucoma requiring glaucoma surgery / cyclodiode laser treatment following silicone oil injection

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Purpose: Secondary glaucoma is a known complication of silicone oil (SO) tamponade of complicated retinal detachments, and an additional burden on service provision in a public health care setting. We reviewed the number of patients in a tertiary centre requiring glaucoma surgery and cyclodiode laser (GS/CL) treatment following SO injection.

Method: Retrospective case-note review of all eyes undergoing GS/CL treatment following SO injection at St Paul's eye unit between August 2001 and October 2015 with minimum follow-up of 1 year.

Results: 35 eyes from 35 patients (23 male), of median age 59 years (range 13 - 86), underwent GS/CL and had 35.9 months (median; range 13.8 - 101.3 months) follow-up. Of these, 12 had SO remaining in situ at first GS/CL. Five patients had 2 SO vitrectomies prior to GS/CL.

Intra-ocular pressure (IOP) prior to SO vitrectomy was 17.0mmHg (median; range 6-40mmHg) whilst pre-GS/CL IOP was 31.0mmHg (median; range 13-60mmHg). IOP immediately following final GS/CL was 18.0mmHg (median; range 2-52mmHg) which reduced to an IOP of 15.5mmHg (median; range 0-52mmHg) at final follow-up. Seven patients (20%) required more than one mode of GS/CL, with 3 of these requiring 3 or more procedures in order to lower IOP.

Patients were treated by Ahmed Glaucoma valve implantation (n=14), deep sclerectomy (n=13), and cyclodiode laser (n=15). Prior to GS/CL, patients were on 3.6 (mean; SD 1.2) different medications, which reduced to 1.7 (mean; SD 1.5) at final review.

At final follow-up, 2 patients had undergone enucleation and a further 2 patients were hypotonous.

Conclusion: Secondary glaucoma following SO retinal tamponade can be managed with a variety of interventions. In most cases, adequate IOP control can be achieved with one single intervention leading to reduced dependence on topical / systemic treatment. The risk of requiring GS/CL following SO vitrectomy should be communicated to patients.

RF-GLA-160

Image quality assessment of automatic gonioscopy

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Purpose: To analyze the quality of 360-degree iridocorneal angle images captured with NIDEK prototype digital gonioscope camera in a real-life setting.

Methods: In this hospital-based, cross sectional study, consecutive patients that would have undergone a dynamic gonioscopy were asked to take an automated gonioscopy picture using a contact-gonioscope prototype by NIDEK®. A post-hoc quality screening for the best image in each of the 4 quadrants (45° segment with 16 pictures each). Images were graded in a Likert scale, ranging from 0 (best) to 2 (worst).

Angle was classified as closed if the posterior trabecular meshwork could not be seen in at least two quadrant images. The number of angle details were additionally recorded.

Results: A total of eighty-eight eyes of 47 subjects (53,4% women) were examined. The mean age was 61,8±16,2 years-old (range 13-87). The majority of patients (74,5%, n=35) were referred from the Glaucoma Clinic, with the remaining 12 patients being referred from the General Consultation.

Most eyes (68,2%, n=60) had an open angle (Shaffer III or higher). The mean number of good quality images per eye was 7.0±4,8 (range 0-16). Quality wise, the quadrants were ranked as followed (highest to lowest): nasal inferior 0,9±0,7 < temporal inferior 1,1±0,8 < nasal superior 1,3±0,7 < temporal superior 1,5±0,6, with the mean number of angle details following the same pattern.

The rate of poor pictures (unable to qualify) was 21.6% (n=19), where no qualified images, and no angle evaluation was possible.

There was no correlation between image quality and gender, age, being under topical therapy nor specialty referral. Interestingly, there was a negative correlation between image quality and the existence of a prior glaucoma surgery ($r^2=0,110$; $p=0.002$).

Conclusions: These results suggest that automated gonioscopy remains a difficult task in a real-life setting, with a significant rate of poor quality pictures.

RF-GLA-161

Real world safety, efficacy and tolerability study for preservative-free latanoprost eyedrops in patients with ocular hypertension or glaucoma

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Purpose: To determine the real world safety, efficacy and tolerability of preservative-free latanoprost (Monopost) monotherapy

Method: We conducted a retrospective chart review for all patients with ocular hypertension or glaucoma taking Monopost from 2012 to 2016 in Colchester University Hospital NHS Foundation Trust, UK. Patients on combination therapy with more than one ocular hypotensive agent were excluded from analysis.

Intraocular pressures (IOP) prior to starting Monopost and IOP at the next appointment were recorded. Medications prior to switching to Monopost and reasons for starting Monopost were noted. Intolerability and reasons for stopping Monopost were documented.

Results: 59 patients were identified. 50 patients started Monopost due to intolerance of other medication (85%). 12 patients were unable to tolerate Monopost due to uncomfortable eyes (n=11) and anterior uveitis (n=1).

87 eyes (47 patients) were analysed for efficacy. The majority of patients (39 patients, 76 eyes) were on prior therapy including: preserved latanoprost, travoprost, tafluprost, timolol, bimatoprost, bimatoprost/timolol, dozolamide/timolol, brinzolamide/timolol, travoprost/timolol, and brimonidine. Eyes with treatment at the time of starting Monopost monotherapy (n=58) observed a mean IOP increase of 1.9 mmHg.

14 eyes had no prior treatment with any glaucoma medication and had a mean IOP reduction of 7.6 mmHg with Monopost.

Conclusion: This is the first study looking at real world data for Monopost. Results were skewed to patients who were intolerant glaucoma medication. 76% of patients who could not tolerate other medication accepted Monopost. Only 8 patients (14 eyes) started Monopost as first-line therapy (n=14). These eyes had a significant reduction in mean IOP of 7.6 mmHg in keeping with trial data. Patients who switched to Monopost from other therapy had a mean IOP increase of 1.9 mmHg. This study may be of interest to anyone considering using Monopost.

RF-GLA-162

Trabeculectomy: evaluation of the area exposed to mitomycin C

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Purpose: Antimetabolites have been used in glaucoma to increase the efficacy of filtering procedures. The ideal time of exposure, area of sclera exposed and side effects associated with its use have been questioned over time. Trypan blue is a vital dye that can be used concomitantly with antimetabolites enabling a more controlled and safe application by the surgeon. The present study aims to document the area exposed to mitomycin C (MMC) in trabeculectomy and explore its eventual correlation with parameters of efficacy and safety.

Method: Prospective, nonrandomized, pilot study of 14 eyes of 14 patients with medically uncontrolled primary open angle glaucoma whose were submitted to surgery. All eyes followed a standard trabeculectomy with the exception that a solution combining MMC (0.4mg/mL) and Trypan blue 0.1% (0.02mL) was applied during two minutes over the sclera instead of isolated MMC. The primary goal was to evaluate the treated area with MMC intraoperatively, which was accomplished with computer software analysis (Image J®).

Results: The mean area exposed to the MMC/Trypan blue solution was 135.5 ± 39.59 mm². The mean time of follow-up was 3.8 months (range 3-6 months). Mean IOP reduction was 13.1 ± 5.77 mmHg. There was not a statistically significant relationship between the area exposed to the MMC and parameters of efficacy and safety ($p > 0.05$).

Conclusion: The preliminary results of this pilot study give an approximation of the treated area with MMC during trabeculectomy. It also suggests that the area exposed to the antimetabolites does not seem to be a determinant factor on the hypotensive efficacy nor on the security profile of the trabeculectomy, in the short term.

RF-GLA-163

Xen45 Gel Stent: safety and efficacy in the treatment of primary open angle glaucoma

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Purpose: To establish the safety and efficacy of the Ab Interno Collagen Stent (AICS) Xen45 Gel Stent in combination with subconjunctival Mitomycin C (MMC) in patients with open angle glaucoma (OAG), in the reduction of intraocular pressure (IOP), antiglaucomatous treatment (AT). To study the incidence of complications and need for reinterventions with this procedure.

Methods: Prospective study involving 16 eyes with OAG, not controlled by AT, submitted to AICS implantation (Xen45 Gel Stent) following subconjunctival MMC, with 5 to 12 months of follow-up ($\bar{x}=7,94 \pm 3.19$). Patients were reevaluated on the 1st day, 1st week and at 1st, 3rd, 6th and 9th months of follow-up. IOP and bubble dimensions were registered and the need for reinterventions or HT was analyzed. Incidence of complications, need for reinterventions and reintroduction in AT were registered. Wilcoxon signed rank test was used to compare pre- and postoperative IOP. Correlation analysis was made between IOP reduction, bubble dimensions and age.

Results: Mean IOP values were 21.56 ± 4.93 mmHg, 11.62 ± 6.20 mmHg, 12.93 ± 5.95 mmHg; 17.56 ± 5.97 mmHg, 14.07 ± 4.01 mmHg and 14.34 ± 2.77 mmHg and 14.33 ± 4.34 at the preoperative day, 1st day, 1st week and 1st, 3rd, 6th and 9th months, respectively. Re-interventions were necessary in 7 eyes. IOP reductions compared to preoperative values were statistically significant at all follow-up visits ($p < 0,01$), except for the 1st post-operative month. There was a statistically significant inverse correlation between IOP reduction and age at the first day and 6th postoperative month ($p < 0.002$; $r = -0.73$ and $p < 0.007$ and $r = -0.71$ respectively). AT was reduced by 85% at nine months.

Conclusions: The insertion of the AICS Xen45 Gel Stent with adjunctive MMC significantly reduced IOP over 9 months of follow-up without significant complications, notwithstanding a considerable need for re-interventions.

RF-GLA-164

Translaminar pressure gradient is increased in the upright body position in normotensive and hypertensive rats

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Purpose: It has been suggested that the pathogenesis of glaucoma may depend on an increased translaminar pressure gradient, a difference between intraocular and intracranial pressure, rather than on intraocular pressure itself. It has also been proposed that hypertension might correlate with the incidence of glaucoma, however, the data is inconsistent. Here, we studied the effect of systemic blood pressure and changes in body position on translaminar pressure gradient in normotensive and hypertensive rats.

Method: Experiments were performed on anaesthetized 15-16 week old, male, SHR rats (hypertensive rats, n=10) and WKY rats (normotensive rats, n=10). Recordings of intracranial and intraocular pressures were performed before, during and after changing body position from horizontal to vertical.

Results: At baseline hypertensive rats had higher arterial blood pressure than normotensive rats. In contrast, intraocular, intracerebroventricular pressures and translaminar pressure gradient was similar in the studied groups. Changing body position from horizontal to vertical elicited a significant

decrease in intracranial pressure, a non-significant decrease in intraocular pressure and a significant increase in the translaminar pressure gradient. No significant difference between normotensive and hypertensive rats in the pattern of intraocular, intracerebroventricular and translaminar pressures gradient changes was observed.

Conclusion: Change in body position from horizontal to vertical, but not hypertension causes a significant increase in translaminar pressure gradient. If translaminar pressure gradient plays a role in aetiology of glaucoma, a vertical position and changes in body position may be considered as debilitating factors.

RF-GLA-165

Comparison of the tests to detect glaucomatous visual field progression

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Purpose: To compare methods to detect glaucomatous visual field (VF) progression by combining the significance of progression in all VF test locations

Methods: VFs from 106 eyes of 71 participants in the University of Tokyo hospital were obtained using the Humphrey 30-2 or 24-2 VF tests. Eyes with at least 16 visits with approximately six-month interval between visits (interval greater than 3 months and less than 2 years) were included in the study. Only VF test points matched to 52 24-2 tests were used.

Linear regression of each test location was carried out and the significance of slopes (p-value) was calculated. P-values of 52 test points were merged using a modified Wilcoxon approach (median of the significant points), and a single p-value was generated.

The accuracy of the progression detection was assessed on VF series of five visits to 15 visits (excluding the first visit) using the hit rate, that was calculated against the false positive rate (FPR) which was computed using the randomly permuted VF series.

The proposed approach was compared against linear regression with mean deviation (MD) and permutation of pointwise linear regression (PoPLR), using the receiver operating characteristic (ROC) curves.

Results: With the initial five VFs, the partial area under the ROC curve (from 0 to 0.15 FPR) was 0.02 for linear regression of MD, PoPLR, and the proposed approach, while the partial area under the ROC curve was 0.08 for linear regression of MD and PoPLR and 0.10 for the proposed approach using 15 VFs.

Conclusions: The accuracy of the proposed approach outperformed that of the linear regression of MD and PoPLR with longer series of VFs.

RF-GLA-166

Vision-related quality of life in 70-year-olds with or without self-reported glaucoma

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Purpose: To evaluate vision-related quality of life in subjects with or without self-reported glaucoma, and to compare with results from ophthalmologic examinations.

Methods: Of the 1220 subjects enrolled in the H70 study on 70-year-olds, 1120 subjects completed the National Eye Institute Visual Function Questionnaire (NEI VFQ-25) and 1157 subjects were examined for near visual acuity using the Jaeger chart. A subset (n=561) underwent further ophthalmologic examinations including best-corrected far distance visual acuity (BCVA), visual field test and measurement of intraocular pressure (IOP).

Results: The prevalence of self-reported glaucoma was 4.3%; 4.7% for women (n=633) and 3.8% for men (n=549; p=0.475). Persons with self-reported glaucoma had significantly lower scores regarding general vision (p=0.006), ocular pain (p=0.001), distance activities (p=0.005), social functioning (p=0.006), mental health (p<0.001), role difficulties (p=0.020), driving (p<0.012), colour vision (p=0.037) and peripheral vision (p=0.002) but not for near activities (p=0.179) or dependency (p=0.431). The composite score was 89.5 for glaucoma cases and 93.67 for no-glaucoma subjects (p=0.001). There was no significant difference in near distance visual acuity between groups; 8.5 % of glaucoma cases could not read less than 8 p compared to 6.0 % in the group who reported no glaucoma (p=0.527). BCVA logMAR (right eye) in the glaucoma group was 0.034 and 0.006 (p=0.628) in the no glaucoma group. A visual field defect (either eye) was present in 76.9% and 14.5% in the glaucoma and no-glaucoma groups respectively (p<0.001). Mean IOP (right eye) was 17.4 for glaucoma cases and 15.9 for no-glaucoma subjects (p=0.131).

Conclusions: Even in the absence of significant differences in visual acuity, patients with self-reported glaucoma have considerably poorer vision-related quality of life in a number of task-oriented activities, emotional well-being and social functioning.

RF-RET-169

Choriocapillaris changes imaged by OCT angiography after spontaneous resolution of acute central serous chorioretinopathy and their correlation with fluorescein angiographic leak

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Purpose: Optical coherence tomographic angiography (OCTA) is a newer non-invasive investigative tool that helps in evaluating the retinal and choroidal circulation at all levels. However, its role in the management of various retinal disease is still under study. We conducted this case series to study the changes in choriocapillaris using (OCTA), in eyes with acute central serous chorioretinopathy (CSC) as compared with contralateral normal eyes and with spontaneous resolution of serous retinal detachment.

Method: We studied 5 eyes (5 patients) with unilateral acute CSC and followed them over 1 month for spontaneous resolution of subretinal fluid. OCTA was performed at presentation and at 1 month. The choriocapillaris

flow in the affected eye was compared with the contralateral normal eye and also at 1 month of follow up.

Results: At presentation, all eyes showed hyporeflective choriocapillaris as compared with the contralateral eyes on OCTA. All 5 eyes showed dark areas. In addition, one eye showed dark spots and 2 eyes showed dilated choroidal vessels. The areas of abnormal flow, dark areas and dilated choroidal vessels shrank progressively at 1 month with spontaneous decrease in subretinal fluid, and were replaced by normal structures and a uniform reflectivity. Serous retinal detachment was diminished in all eyes, with 3 achieving complete resolution at 1 month. Fluorescein angiography was done in 3 of 5 eyes. In 2 eyes, the area of hyperreflectivity corresponded to the point of leak on FFA while in the 3rd eye, there was no definitive leak on FFA and the OCTA showed diffuse hyporeflectivity.

Conclusion: On OCTA, the choriocapillaris shows flow abnormalities in eyes with acute CSR when compared with normal eyes. These abnormalities tend to recover with spontaneous resolution of serous retinal detachment. The area of abnormal flow may correspond with the point of leak on FFA. OCTA may be clinically useful for evaluating choriocapillaris in patients with CSR.

RF-RET-170

Ganglion cell complex changes after cataract surgery

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Purpose: To analyze changes of ganglion cell complex thickness in patients undergoing cataract surgery.

Method: Prospective study in patients who underwent uneventful cataract surgery. Macular cube OCT (Carl Zeiss Meditec Cirrus HD) with at least 5/10 quality was performed, at baseline and 3 months after surgery, being excluded those cases with segmentation errors.

Patients with high myopia, macular edema, surgical history or intraocular treatments (laser or intravitreal) were excluded.

Data were analyzed by Student t test for paired data.

Results: 102 eyes were included, Mean age was 74.6 (range, 50 to 88 years). Average quality improved from 6.36 to 7.66 after cataract surgery ($p = 0.083$). Mean ganglion cell thickness was $76.15 \pm 8.20 \mu$ (range, from 53 to 102) at baseline and $78.66 \pm 9.70 \mu$ (range, from 34 to 104) three months later ($p < 0.01$). This difference was also significant when sectors were analyzed, (pre surgery - post surgery): Upper ($76.51-78.50 \mu$) upper temporal ($76.61-79.42 \mu$), inferior temporal ($77.50-79.57 \mu$), inferior ($75.23-77.61 \mu$), inferior nasal ($74.28-78.54 \mu$) and upper nasal ($76.90-78.74 \mu$). When average of superior and inferior sectors were compared, difference between pre and post surgery for upper sectors group were 2.20 ($p < 0.01$) and 2.90 ($p < 0.01$) for the inferior ones.

Conclusion: An increasing in of ganglion cell complex thickness was found at third month postoperatively. And there is no differences between superior and inferior sectors. This increase should be taken into account in the follow up of patients.

TALKING POSTER PRESENTATIONS

TP01: Cataract, Glaucoma, Oculoplastics, Paediatric Ophthalmology

TP01-OPL-171

Novel techniques in hughes tarso-conjunctival flap reconstruction: long term outcome in 27 patients

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Purpose: To describe a novel technique utilizing an amniotic membrane graft (AMT) to create the mucocutaneous portion of the lower eyelid margin in a modified Hughes eyelid reconstruction.

Methods: Retrospective, non-comparative interventional case series study of 27 consecutive patients who underwent lower eyelid reconstruction after a Mohs procedure with a modified Hughes procedure. The first step of the reconstruction was performed in a standard fashion using a tarsoconjunctival flap from the ipsilateral upper eyelid and a skin graft from the opposite upper eyelid. The second stage of the operation was accomplished by the division of the flap. The modification of the standard procedure included the addition of an amniotic membrane graft (AMT) (Ambio 5®, IOP Ophthalmics, Costa Mesa, CA) to the new mucocutaneous junction.

Results: 27 consecutive patients (mean age was 70.85 ± 8.65 , 18 females) were included. Indications for Mohs surgery included basal cell carcinoma (n=26) and squamous cell carcinoma in situ (n=1) of the lower eyelid. The mean size of the defect was 3.58 ± 0.98 cm², involving $73.92 \pm 18.8\%$ of the lower eyelid. The average time to flap division was 30.85 ± 7.82 days. The mean follow up time was 4.27 ± 3.95 months. There was no evidence of hyperemic or hypertrophic margin following a primary addition of the AMT (n=26) or recurrence of hyperemic margin after revision with addition of AMT (n=1) at follow-up. One patient (3.5%) developed a pyogenic granuloma and one patient (3.5%) developed a mild ectropion not needing any surgical intervention.

Conclusions: The addition of an AMT for the prevention of a hyperemic, hypertrophic eyelid margin in the post Hughes flap lower eyelid reconstruction is an excellent technique. The role of AMT addition to the second stage Hughes flap separation has favorable outcomes in this preliminary study; however warrants further investigation with larger number of patients and longer follow up.

TP01-CAT-172

Bilateral exudative choroidal detachment after femto-phaco-emulsification

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Introduction: Many advances have been made in the technique of cataract surgery. One of the main ones is the femtoseconds laser (FS). Compared with the traditional technique, incisions are more accurate, it is more predictable and allows the use of less energy in phacoemulsification. Even so, it presents intra and postoperative complications.

Clinical case: A 72-year-old patient with visual acuity (VA) with a correction of 20/40 in both eyes (BE). At the exploration it is all normal in anterior and posterior segment except for cortical N5 cataracts and discrete alterations of retina's pigmentary epithelium. We proceed to cataract surgery assisted by FS laser + phacoaspiration and implant of a lens in the posterior chamber. In the

postoperative period, the left eye (LE) gains vision very slowly while the right eye (RE) the day after the surgery shows decreased VA and metamorphosia. OCT and ultrasonography of BE were performed, with significant choroidal exudation in RE with associated subretinal fluid and in LE a diffuse thickening in the posterior pole; diagnosed of greater exudative choroidal detachment (CD) in RE.

Conclusions: Although femtoseconds laser has proven to be an effective and safe technique, it has been seen in numerous studies an important inflammation after its use with increase of IL1, IL6 and PGE2 in addition to having important intraocular pressure variations. Therefore, even though no CD has been described after FS laser, we believe that in patients with certain risk factors it may be a new complication.

TP01-PED-174

Pupuloplasty in congenital acoria syndrome

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Purpose: To work out pupuloplasty technique in congenital acoria case with lens transparency preservation.

Method: 1 mo/o girl with total acoria, complicated by secondary hypertension, previously operated on the right eye. Reconstruction of anterior chamber with separation of anterior cornea-iris adhesions and peripheral iridectomy was done. The second visit after 6 years has shown: RE - customar transparent cornea, total pupil absence, blind eye, normal intraocular pressure, US examination - equal anterior chamber 2,7 mm depth, normal lens topography with 4,4 thickness, attached retina, papilla optic excavation 1,7mm and posterior staphyloma (9,0mm). Left eye - healthy. US-biometry: RE - 25,7mm, LE - 22,4mm.

Results: Pupuloplasty started with iris viscodissection from anterior lens capsule trough previously made peripheral coloboma. Microspatulae was insert through the coloboma to central iris part and first iridotomy puncture was performed at the end of it. A thick white membrane was found under iris. Usage of vitrectomy scissors allowed to start pupuloplasty without touching the lens surface due to viscoelastic. Vitrectom without irrigation was used to confirm the pupil formation - round 3 mm size in the central part of the iris. Lens remained transparent. Slight ovalization of the newly formed pupil was noticed after several days possibly due to retained dilatator fibres traction. Visual acuity improved to 0,02 because of high amblyopia. Cosmetic result was excellent.

Conclusion: Early peripheral iridectomy can maintain the anterior chamber and restore the filtrative zone with intraocular pressure normalization in acoria syndrome. Dense white color film was found under iris in congenital acoria syndrome, possibly persistent pupillary membrane, marked by us and other authors in microcoria cases. Lens transparency saving during pupuloplasty in acoria is possible using gentle viscodissection of iris and anterior lens capsule with microsurgical intervention.

TP01-GLA-175

Persistence of anti-glaucoma therapy for better patient outcomes*Dias J.A.^{1,2}, Donde S.^{3,4}, Dias I.⁵**¹Malo Clinic, Ophthalmology, Lisbon, Portugal, ²CUF Hospital, Ophthalmology, Lisbon, Portugal, ³PFIZER, Sutton, United Kingdom, ⁴Health Care Learning, London, United Kingdom, ⁵PFIZER, Lisbon, Portugal*

Purpose: Low adherence/persistence is a major challenge in glaucoma treatment.

Objective: To review the published literature regarding persistence of anti-glaucoma therapy and examine its impact on patient outcomes.

Material and methods: In this study, we screened the published literature from "PubMed" with search words "persistence" and "anti-glaucoma therapy". All articles (randomized controlled trials, observational studies, review articles) were considered for review. Those not related to adherence and/or persistence of anti-glaucoma therapy were excluded from the review.

Results: A total of 100 articles from 1975 to 2016 were retrieved for the review. Many studies have evaluated adherence and factors associated with it; however, evidence from well designed clinical trials evaluating outcomes of long term adherence is scanty. The review of literature clearly suggests that adherence to both therapeutic agents as well as preventive therapy is very important to improve outcomes of disease management. Adherence to therapy depends on type of medicine, number of medications, frequency, cost, physician-patient relationship, number of follow up visits, age, gender, individual drug or fixed dose combination of medicines, type of glaucoma, baseline intra-ocular tension, income (socio-economic status) of the patients, medication naïve versus experienced patient and adverse events with therapy. Efforts by physician to identify compliance rate and obstacles for it, involvement of patient and family in the treatment process, improving patient's knowledge and use of electronic devices for providing reminders could be useful for improving adherence and outcomes of therapy.

Conclusion: Importance of adherence is unanimously accepted. However, studies evaluating impact of persistence of anti-glaucoma therapy on patient outcome are limited. There is a need to conduct randomized controlled studies showing the benefits of long term adherence to anti-glaucoma therapy.

TALKING POSTER PRESENTATIONS

TP02: Contact Lenses, Cornea, Education, External Eye, Ocular Surface

TP02-EXT-178

Eyelid dermatitis caused by allergic contact to acrylates in artificial nails*Moreira J., Gonçalves R., Coelho P., Maio T., Tenedório P. Hospital Pedro Hispano, Ophthalmology, Porto, Portugal*

Purpose: Exposure to acrylates in artificial nails may induce a wide variety of clinical manifestations and affects, most commonly, the nail area. Ectopic eyelid contact dermatitis due to artificial nails is rarely seen, especially in a non-occupational setting.

Method: We present the case report of a woman with an acute eyelid dermatitis due to artificial nails.

Results: A 45-year-old female, accountant, otherwise healthy, experienced an extremely pruritic and symmetric redness of the eyelids.

Examination, showed a well defined erythema of both eyelids. At the slit lamp exam, eye examination was normal. There was no personal or family history of atopy. A detailed history of her exposures revealed that she wore artificial acrylic nails.

The patient was referred to patch testing and positive reactions were observed to acrylates. The results were consistent with the diagnosis of allergic contact dermatitis (ACD) to acrylate-containing artificial nails. The eyelid dermatitis resolved following treatment with topical corticosteroid and removal of the artificial nails.

Conclusion: Red eyelid can be a perplexing diagnostic and therapeutic challenge. A variety of factors, including primary skin diseases and external insults may cause eyelid erythema. In the last few years, with the more common use of artificial nails, an increasing number of cases of ACD caused by acrylates have been reported. Pathological reactions typically occur on or around the nail apparatus. Ectopic reactions, although uncommon in acrylate nail users, occur when the hand transfers small amounts of nail cosmetics to other areas of the skin or by possible airborne dissemination of the allergen.

This case report highlights the importance of the cosmetics, namely, those present in nail care products, when eyelid dermatitis is assessed.

TP02-COL-180

The prevalence, types and risk factors of soft contact lens-related dry eye of healthcare workers in developing country*Taechajongjintana M., Kasetsuwan N., Sawanwattanaku S., Reinprayoon U.**Division of Cornea and Refractive Surgery, Department of Ophthalmology, Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand*

Purpose: To report prevalence, types, and risk factors of soft contact lens-related dry eye.

Methods: A prospective descriptive study was conducted. Between December 2015 and November 2016, patients wearing soft contact lens were consecutively enrolled. Demographic data included age, sex, contact lens type, wearing schedule, frequency of artificial tears used. OSDI questionnaire and TFBUT were used to indicate dry eye. Types of dry eye were evaluated by Schirmer I, tear film lipid layer thickness, meibography, meibum quality and expressibility score. Classifications included aqueous deficiency, evaporative or mixed type. Risk factors of dry eye were assessed using multivariate analysis.

Results: A total of 214 subjects were enrolled (70% female, age 26.4±6.4 years, wearing contact lens for 7.2 (1-20) years and 11.4±2.8 hours/day). Dry eye prevalence was 54.2% (OSDI score 43.9±11.9, TFBUT 5±2.3 seconds) with predominant female (p=0.001) and monthly contact lens wearer (p=0.002) compared to non-dry eye group. Evaporative type was the most common (59%) with average ICU score 51.0±19.4 and % gland dropout 22.6 (7.6-31.4) %, followed by mixed type (34%) and aqueous deficiency type (7%) which had Schirmer I value 4.1±1.1 mm. Risk factors of dry eye were female sex (OR 3.06, 95%CI 1.54-6.11, p=0.001) and monthly wear contact lens (OR 3.25, 95%CI 1.37-7.72, p=0.08).

Conclusion: Dry eye was amongst the most concerning issues before prescribing contact lens. More than half of soft contact lens wearers could develop dry eye, mainly evaporative type. It was necessary to educate patients about this burden, especially for women and monthly contact lens wearers.

TALKING POSTER PRESENTATIONS

TP03: Neuro-ophthalmology, Oncology & Pathology, Uveitis

TP03-ONC-181

Orbital tumor cases: lymphoma*Haluzova P., Karhanova M.**University Hospital Olomouc, Department of Ophthalmology, Olomouc, Czech Republic*

Purpose: To evaluate the clinical signs, diagnostic approach and to analyze treatment outcomes in orbital lymphomas.

Methods: Retrospectively, we identified and reviewed 5 cases of orbital lymphoma from a group of 48 patients diagnosed with orbital tumors at our department between 2008 and 2016.

Results: The patient sample consisted of 5 patients with a median age of 59 years (47 to 79). The patients presented with eyelid swelling, proptosis, ptosis, palpable resistance, diplopia and motility impairment. Vision was preserved in all patients. All patients underwent orbital MRI. Diagnosis was based on histological examination after surgical biopsy or tumor resection. In one patient, diagnosis was confirmed by PET/CT and thoracoscopic biopsy. All patients were treated at the Department of Hemato-Oncology according to the histological type of tumor, clinical staging and appropriate treatment protocols. One patient with MALT lymphoma reached complete remission. In the patient with follicular lymphoma (with systemic dissemination), the disease relapsed twice. The third case diagnosed with MALT lymphoma (with systemic dissemination by follicular lymphoma) reached PET/CT-negative remission with inactive residual findings; however, orbital MALT lymphoma relapsed. In the fourth patient with MALT lymphoma, residual findings and negative staging were observed. Finally, the patient with lymphoblastic lymphoma reached complete remission with subsequent disease relapse and general health deterioration.

Conclusions: The clinical findings in patients with orbital lymphomas are non-specific. The use of appropriate imaging methods and surgical biopsy or resection may lead to early and correct treatment. We can confirm that MALT lymphoma has a better prognosis than other types of orbital lymphomas (unless it is a part of systemic dissemination). In cases of non-MALT lymphoma, the prognosis is less favorable. Despite appropriate treatment, there is still a high risk of disease relapse.

TP03-NEO-182

Visual dysfunction and its correlation with retinal changes in patients with Alzheimer's disease*Viladés E.^{1,2}, Satué M.^{1,2}, Obis J.¹, Ciprés M.¹, Rodrigo M.J.¹, Garcia-Martin E.^{1,2}**¹Miguel Servet University Hospital, Ophthalmology, Zaragoza, Spain,**²Instituto de Investigación Sanitaria de Aragón, Zaragoza, Spain*

Purpose: To evaluate visual dysfunction and its correlation with structural changes in the retina in patients with Alzheimer's disease (AD).

Methods: Patients with AD (n=24) and controls (n=24) underwent evaluation of visual acuity (VA), color vision (using the Farnsworth and L'Anthony desaturated [D]15 color tests), and contrast sensitivity vision (CSV; using the Pelli-Robson chart and CSV-1000E test) to measure visual dysfunction. Structural measurements of the retinal nerve fiber layer (RNFL) and macular thickness were obtained using spectral domain-optical coherence tomography (SD-OCT).

Results: CSV at three of the four spatial frequencies was significantly worse in AD patients than in controls. Color vision was significantly affected in AD patients based on the Farnsworth color test. Compared with controls, macular thinning was detected in all sectors except the fovea, and the RNFL exhibited significant thinning in the superior quadrant and lower average thickness ($p < 0.05$). CSV was the functional parameter most strongly correlated with structural measurements in patients with AD. Color vision was strongly associated with macular volume ($r > 0.70$, $p < 0.05$). VA at different levels of contrast was associated with macular and RNFL thickness.

Conclusions: Patients with AD had visual dysfunction that correlated with structural changes evaluated by SD-OCT. Macular measurements may be reliable indicators of visual impairment in AD patients.

TP03-EPH-183

Correlations of optical coherence tomography findings with metamorphopsia test and multifocal electroretinogram in epiretinal membrane patients*Kim H.D., Park S.Y., Kim P.S., Moon C.Y., Lee J.W.**Soonchunhyang University, College of Medicine, Department of Ophthalmology, Cheonan, Korea, Republic of*

Purpose: To investigate the correlations among the optical coherence tomography (OCT) findings, the results of metamorphopsia test and the parameters of multifocal electroretinogram (mfERG) in epiretinal membrane (ERM) patients.

Methods: Overall 48 eyes of 48 patients with idiopathic ERM were enrolled. All patients underwent comprehensive ocular examination including best-corrected visual acuity (BCVA), fundus examination, spectral-domain OCT, metamorphopsia test and mfERG. Metamorphopsia test was performed in 21 points of the field, and the metamorphopsia scores on each subfield were estimated. Central retinal thickness was observed using OCT. Retinal wrinkling ratio was calculated on within 3 mm area of horizontal OCT scan image. The mean response densities and implicit times from in each subdivision were elicited from mfERG. The correlations among retinal wrinkling ratios, metamorphopsia scores and mfERG parameters were evaluated.

Results: The averaged metamorphopsia scores of total visual field was 2.03 ± 1.18 . The mean metamorphopsia scores in the central subfield revealed significant correlation with BCVA, while metamorphopsia scores were not correlated with BCVA. The mean retinal thickness and wrinkling ratio from OCT images were remarkable increased in subfields which had high metamorphopsia scores. The mean metamorphopsia scores revealed correlation with N1, P1, and N2 response densities, but they were not related with the implicit times of mfERG. Moreover, retinal wrinkling ratios were also associated with P1 response density in the central subfield.

Conclusion: These results suggested that metamorphopsia test could allow us to evaluate the degree of metamorphopsia objectively on individual subfields. Several significant correlations were shown among metamorphopsia scores and OCT findings in the subfields with high metamorphopsia scores. Metamorphopsia scores revealed significant correlation with mfERG response densities, especially on the central retina.

TP03-UVE-184

The evolution of retinal thickness changes throughout the treatment period in acute anterior uveitic patients with spondyloarthropathySzepessy Z.¹, Barsi A.², Nagy Z.Z.¹¹Semmelweis University, Budapest, Hungary, ²Budapest University of Technology and Economics, Budapest, Hungary

Purpose: Our goal is to correlate the degree of the anterior chamber inflammation with the central retinal thickness throughout the treatment period (in the course of follow-up) in eyes affected with acute anterior uveitis in patients with seronegative spondyloarthropathy.

Methods: 30 eyes of 20 consecutive Caucasian patients (12 males and 8 females, age: 27-50 years, mean age: 35 years) with acute anterior uveitis (10 patients have bilateral, 10 patients have unilateral uveitis) were studied. OCT examinations were performed on each eye using a spectral-domain (SD) Optovue RTVue-100 optical coherence tomograph.

Quantitative measurements of anterior chamber aqueous flare and inflammatory cells were conducted using a laser flare meter (Kowa FC-600). All uveitic eyes were treated with five times topical corticosteroid drops and cyclopentolate (5mg/ml) three times a day.

Patients were followed daily until manifest response to local treatment was observed (defined as a decrease of anterior chamber cells on slit-lamp examination) and weekly thereafter until complete resolution of inflammatory activity.

Statistical analysis was performed by Mathworks Matlab 2012b software. A p-value of less than 0.05 was considered as statistically significant.

Results: A statistically significant increase was found in macular volume in acute anterior uveitic eyes compared with the healthy fellow eyes. In all OCT subfields the retina was thicker on a statistically significant level ($p < 0.001$). There was a linear correlation between the degree of inflammation and retinal thickening ($p < 0.001$).

In the follow-up period retinal thickening was increase in the first 10-12 days and then slower decrease until stabilization (after 4-6 weeks). The linear correlation between flare and retinal thickening did not hold throughout the treatment period.

Conclusion: OCT is a sensitive, useful tool to monitor response to the treatment in acute anterior uveitis.

Results: Capillary rarefaction areas were of $0,99 \pm 1,16 \text{ mm}^2$ and $0,12 \pm 0,06 \text{ mm}^2$ in the superficial; $1,11 \pm 0,88 \text{ mm}^2$ and $0,18 \pm 0,13 \text{ mm}^2$ in the deep and $0,74 \pm 0,61 \text{ mm}^2$ and $0,17 \pm 0,16 \text{ mm}^2$ in the choriocapillaris plexi, for the patient and control group respectively. The difference in areas of capillary rarefaction between the two groups was statistically significant in all plexi ($p < 0.05$).

There was no statistically significant difference in the central avascular zone areas between the two groups, in any of the analysed plexi.

Conclusion: OCT-A is a good method for the evaluation of the retinal plexi. There was a statistically significant increase in areas of capillary rarefaction in patients with end stage renal disease compared to the control group.

TP03-RET-185

Macular perfusion in patients with end stage renal disease: A OCT-angiography study

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Purpose: To evaluate retinal microvascular changes in non-diabetic, end stage renal disease patients, before dialysis treatment, through optical coherence tomography angiography (OCTA).

Method: Case-control study including 10 non-diabetic, end stage renal disease patients (stage V), not on dialysis, versus 10 age-matched controls. All patients were submitted to OCTA (AngioPlex Cirrus HD-OCT model 5000; Carl Zeiss, Dublin, USA) within a scanning area of $3 \times 3 \text{ mm}$, centered on the fovea.

Images were analysed with the *SketchAndCalc*TM area calculator, by two independent observers, to calculate the central avascular zone area (superficial and deep plexi) and areas of capillary rarefaction (superficial, deep and choriocapillaris plexi).

ELECTRONIC POSTER PRESENTATIONS
CATARACT

EP-CAT-190

Resident outcomes using femtosecond vs traditional phacoemulsification surgery*Grieser E., Smith R., Islam Y., Zou B.**University of Florida, Ophthalmology, Gainesville, United States*

Purpose: To evaluate the resident training experience with the Femtosecond laser, including refractive outcomes and surgical complications

Method: Patients had cataract surgery with a resident performing either femtosecond or traditional phacoemulsification removal. Patients received monofocal acrylic intraocular lens based on optical biometry. Surgical operative reports were reviewed, with intraoperative complications collected. Postoperative follow ups were reviewed, and included final manifest refraction at post op month one or later. Data were analyzed using open source statistical software package for comparing the postoperative outcomes between the two groups.

Results: The study included 188 eyes (134 traditional phacoemulsification and 54 femtosecond). Average PGY resident case level was 4.1 for femtosecond versus 3.1 for manual phacoemulsification. Monofocal acrylic lenses were implanted, with the Acrysof SN60WF the predominate lens used (133 phacoemulsification and 50 femtosecond).

Adjusting for age, gender, eye and preoperative best corrected visual acuity, there was a statistically significant difference in postoperative cylinder present on manifest refraction (0.47 vs 0.72; $p=0.018$).

However, postoperative spherical equivalent was not statistically significant (-0.45 vs -0.32; $p=0.404$) nor was postoperative uncorrected or best corrected acuity (logMAR 0.244 vs 0.253; $p=0.545$ and logMAR 0.092 vs 0.090; $p=0.254$). In addition, a statistically significant complication rate existed (11% vs 2.9%; $p=0.026$).

Conclusion: Femtosecond laser assisted cataract surgery performed by residents provided patients with less residual postoperative manifest astigmatism, however, a higher complication rate existed ($p=0.026$) in the femtosecond group, which needs further evaluation with additional studies.

EP-CAT-191

Visual: performance of pinhole intraocular lens in cataract patients two year follow up*Piovella M.¹, Kusa B.²**¹C.M.A. Centro Mirochirurgia Ambulatoriale, monza, Italy, ²C.M.A. Centro Mirochirurgia Ambulatoriale, Monza, Italy*

Purpose: To demonstrate visual performance of the IC-8 small aperture IOL (AcuFocus, Irvine, CA) implanted in patients in whom a cataractous lens has been removed.

Method: 22 patients with cataract, corneal astigmatism ≤ 1.25 , had IC-8 IOL implantation in the non-dominant eye and an aspheric monofocal IOL in the dominant eye. 3 patients experienced bilateral IC8 implants. Postoperatively, the following visual and refractive parameters were measured: distance (4m) near (40cm) and intermediate (70 cm) visual acuity, corneal topography and Acutarget analysis, contrast sensitivity, Hemifield Test and defocus curve. Regular follow-up examinations were performed up to 2 year after surgery.

Results: At 12 months in the IC-8 eye, UDVA is 20/22 \pm 2.64, UIVA is 20/27 \pm 12.39 and UNVA is 20/26 \pm 6.39. In the monofocal eye, UDVA is 20/19

\pm 1.33, UIVA is 20/31 \pm 9.93 and UNVA is 20/64 \pm 21.54. Binocular UDVA is 20/19 \pm 1.51, UIVA is 20/24 \pm 4.93 and UNVA is 20/27 \pm 3.83.

Conclusion: The IC-8 shows excellent visual performance at 18 months following implantation. Best technology monofocal IOL was considered to be implanted in the dominant eye. IC8 Technology mixed with monofocal IOL in the dominant eye provides good far, intermediate and near vision. IC8 IOLs technology application could not be compared with standard distance monovision: minimum far vision with IC8 was 20/25.

EP-CAT-192

Intraocular pressure changes after sulcus fixated reposition of IOL after late-IOL-dislocation*Vanags J., Laganovska G.**Riga Stradins University, Riga, Latvia*

Purpose: To evaluate IOP changes and dealing with IOP in follow-up visits after sulcus fixated reposition of IOL after late-IOL-dislocation.

Method: 21 patients (21eyes) suffering late IOL dislocation were operated. VA, IOP data, biomicroscopy pre-, postoperatively, 1 and 3 months follow up visits were analysed. Intraoperative technique includes creation of scleral flap, sclerotomy approximately 2 mm from limbus and IOL/bag or IOL/CTR/bag complex sulcus fixation by means of one 10/0 polipropylene suture.

Results: 11 eyes IOL/CTR/bag complex was repositioned (group 1), 10 eyes-IOL/bag (group2). 5 patients out of each group had glaucoma, treated by 1 antiglaucomatous medicine preoperatively, except 1 patient group 1, treated by maximal medical therapy (3 medicines), and 1 patient in group 2, treated by 2 medicines.

Mean IOP preop in group 1 were 15,5 mmHg (ranges 7mmHg-23 mmHg), postop- 21 mmHg (8 mmHg-36mmHg), $p<0,05$; 1 month- 18,5 mmHg (10-37 mmHg), $p<0,01$; 3 months- 17,9mmHg (ranges 13-29mmHg).

Mean IOP preop in group 2 were 16,9 mmHg(ranges16mmHg-22 mmHg), postop- 25 mmHg (ranges 8 mmHg-36mmHg); 1 month- 14,7 mmHg (ranges 8-26mmHg), $p<0,01$; 3 months- 16,7mmHg (ranges- 7-31mmHg).

6 patients in group 1 were treated by antiglaucomatous drops postop (1 medicine- 1 patient, 2 medicines- 4 patients, maximal medical therapy- 1) for IOP reduction, continued to 3rd month follow-up.

1 eye did not respond to medical antiglaucomatous therapy, sinustrabeculectomy was performed. 5 patients in group 2 were treated by antiglaucomatous drops postop (1 medicine- 1 patient, 2 medicines-2 patients, maximal- 2 patients).

Due to good IOP-lowering response, only 3 eyes in 3rd month follow-up were treated by antiglaucomatous drops- 1 medicine-2 patients, 3 medicine-1 patient.

Conclusion: IOP rise after sulcus fixated reposition of IOL after late-IOL-dislocation was observed. Better response to additional antiglaucomatous medicine in IOL/bag reposition (group2) was observed.

EP-CAT-194

The relation between zonular weakness and the anterior chamber depth in cataract patients with pseudoexfoliation syndrome*Eltutar K., Akcetin T.A., Karini B.**Istanbul Education and Research Hospital, Ophthalmology Department, Istanbul, Turkey*

Purpose: To evaluate the relation between the preoperative anterior chamber depth and the zonular weakness in cataract patients with pseudoexfoliation (PEX) syndrome.

Methods: This prospective study consisted of 30 consecutive patients with Pseudoexfoliation syndrome who had normal axial length (AL) and underwent phacoemulsification and intraocular lens implantation. Patients were divided into two groups according to the ACD. The mean age was 71.85±6.19 years. Male to Female ratio was 12:18. A detailed ophthalmic examination was performed. Also, axial length, anterior chamber depth (ACD) and lens thickness (LT) were measured. Zonular weakness was detected intraoperatively.

Results: Group 1 (13 eyes of 12 patients) had preoperative AL 22.39 ±0.9, ACD 2.17 ±0.21 (≤2.5mm) and LT 4.48 ±0.64. Group 2 (20 eyes of 18 patients) had preoperative AL 23.44±0.85, ACD 2.94±0.32 (>2.5mm) and LT 4.21±0.76. In all patients of Gr 1 intraoperative zonular weakness was detected and a capsular tension ring (CTR) was implanted at all of them. Only in 5 eyes (%25) of Gr 2 intraoperative zonular weakness was detected and a CTR was performed. No posterior capsular rupture occurred in any of the cases. Postoperatively ACD in Gr1 was measured as 4.48±0.64, in Gr 2 as 4.47±1.15 (statistically significant in 2 group).

Conclusion: Patients with PEX syndrome require a careful preoperative examination and planning for a safe and successful surgery. Preoperative reduced Anterior chamber depth may indicate zonular weakness in eyes with Pseudoexfoliation. This should be alert the surgeon to the possibility of intraocular complications related to zonular dialysis.

EP-CAT-195

The effect of capsular tension ring on posterior capsular opacity after phacoemulsification in pseudoexfoliation eyes*Kaya G.**Kagithane State Hospital, Ophthalmology, Istanbul, Turkey*

Purpose: To evaluate the effect of capsular tension ring on posterior capsular opacification.

Methods: Ninety eyes of 60 patients with pseudoexfoliation who underwent phacoemulsification were included in the study. Capsular tension ring was implanted in 44 of the eyes. Remaining 46 eyes without capsular tension ring implantation served as control group. Twelve to 27 months (average 19.5 months) after the surgery, patients were evaluated for the posterior capsular opacity.

Results: Posterior capsular opacification developed in 4 eyes (1 %) in capsular tension ring implantation group and 8 eyes (17.39 %) in the control group. This difference reached statistically significance ($p<0.05$).

Conclusions: Capsular tension ring is associated with a significantly reduced incidence of posterior capsular opacity.

EP-CAT-196

Association of biometric measurements and corneal astigmatism with age in patients who are planned for cataract surgery*Kaya G.**Kagithane State Hospital, Ophthalmology, Istanbul, Turkey*

Purpose: To determine mean biometric values, amounts of corneal astigmatism, types of corneal astigmatism, and their relationships with age in patients who are planned for cataract surgery

Materials and methods: Axial length, anterior chamber depth, corneal curvature of flat and steep meridian (K1, K2), corneal astigmatism amount (K2-K1), astigmatism type (with the rule, against the rule, oblique) values of phakic right eye from 300 patients were examined from the coherence interferometer in this descriptive study. Age was divided into 5 groups (≤40, 41-50, 51-60, 61-70, >70).

Comparisons were performed between different age groups and the causative groups of the differences were found.

Results: Mean corneal astigmatism was 1.00±0.66 diopters (D) and 59 % (n=165) of the cases were lower than 1 D, 41% (n=112) of the cases were higher than 1 D. According to astigmatism type, 40.0% (n=110) was with the rule, 36.4% (n=100) was against the rule, 23.6% (n=65) was oblique. There was a statistically significant difference between age groups according to astigmatism type ($p<0.001$).

This difference resulted from comparisons between age groups of ≤40 and 61-70 ($p=0.01$); and between age groups of ≤40 and >70 ($p<0.001$). Against the rule astigmatism increased with age.

Conclusions: High frequency of with the rule astigmatism in young age groups and high frequency of against the rule astigmatism in elderly groups seems to be important for the choice of clear corneal incision site (superior/temporal), astigmatic correction surgeries and preference of toric intraocular lenses.

EP-CAT-197

Association of chronic kidney disease with risk of cataract: a nation-wide retrospective cohort study*Hung T.-Y.¹, Liu Y.-T.², Su Y.-C.³, Lin Y.-S.¹**¹Zhongxing Branch of Taipei City Hospital, Emergency, Taipei, Taiwan, Republic of China, ²Hsinchu Branch of Taipei Veterans General Hospital, Ophthalmology Department, Hsinchu, Taiwan, Republic of China, ³Dalin Tzu Chi Hospital, Buddhist Tzu Chi Medical Foundation, Emergency, Chiayi, Taiwan, Republic of China*

Purpose: Previous studies established a relationship between chronic kidney disease (CKD) and cataract, but the relationship between the severity of renal impairment and risk of cataract is uncertain. This study investigates the relationship between the severity of renal disease and cataract in a nation-wide sample from Taiwan.

Method: The data from 1-million National Health Insurance beneficiaries from Taiwan were retrospectively analyzed. All adult beneficiaries were followed from 1 January 2005 until 31 December 2013 to identify patients who received cataract surgeries.

Each patient with CKD was age- and gender-matched with 4 individuals who did not have CKD. Conditional Cox regression models were applied to compare the hazard of cataract surgery in individuals with and without CKD.

Subgroup analysis was used to compare patients with end stage renal disease (ESRD) with age- and sex-matched non-CKD individuals. The same method was applied to evaluate hazard ratios.

Results: After age and gender matching, there were 11,881 patients in the CKD group and 47,524 in the non-CKD group. After control for possible confounding, the adjusted hazard ratio of cataract was 1.84 (95% confidence interval, 1.73-1.95) for the CKD group. Subgroup analysis of patients with ESRD (n = 3209) and non-CKD individuals (n = 12,836), with matching by age and gender, indicated an adjusted hazard ratio of cataract was 2.33 (95% confidence interval, 2.10-2.59) for the ESRD group.

Conclusion: This study indicates a relationship between CKD and cataract, and suggests that the risk for cataract increases with the severity of renal impairment.

EP-CAT-198

Objective and subjective accommodation results of AkkoLens lumina intraocular lens

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Purpose: To report the accommodative response, subjectively and objectively viewed, with a model of an accommodative intraocular lens (AIOL), the Akkolens Lumina.

Method: This study included 82 eyes of 58 patients with ages ranging between 43 and 85 years. All patients underwent cataract surgery followed by IOL implantation. According to the IOL implanted, two groups of patients were differentiated; group A, 59 eyes of 43 patients implanted with the Akkolens Lumina AIOL, and group B; 23 eyes of 15 patients implanted with the monofocal Acrysof SA60AT IOL. Distance and near visual acuities, defocus curve and the objective accommodation with the Grand Seiko WAM-5500 Autorefractometer were measured. We report in this study 12 months follow-up data.

Results: Statistical significant difference were observed between groups for defocus levels between -4.50 and -0.50D (p<0.01) with better values for group A. Statistical significant differences were detected between groups in the depth of focus calculated for 0.10, 0.20 and 0.4 visual acuity in logMAR scale (p<0.01) with high values for group A.

Statistical significant differences were observed for the WAM accommodative stimuli of -2.00, -2.50 and -3.00D (p<0.01) with higher values for the AIOL.

Conclusion: The AIOL Akkolens Lumina restore distance and near visual function after cataract surgery. This new AIOL demonstrated an objective accommodative response and a subjective depth of focus significantly larger than the monofocal control group.

EP-CAT-199

Monoscleral IOL fixation in cases of limited posterior capsular support

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Purpose: To describe the implantation of monoblock Acryva 613 UD intraocular lens (IOL) in the posterior chamber with one-haptic scleral fixation in patients with limited capsular support due to cataract surgery.

Method: A PC-9 needle was passed through the elbow part of the haptic and suture fixed to the sclera from one point. The other haptic of IOL was placed to be positioned on the maintained capsule residue.

Results: In all cases monoblock aspheric IOL implanted without serious complication.

Conclusion: Aphakia and IOL dislocation is a frequent complication of cataract surgery due to posterior capsule rupture. Every surgeon can solve this problem using different and useful surgical techniques. In this sense, monoscleral fixation of Acryva UD 613 positively affects visual prognosis and safely implanted.

EP-CAT-200

Association between cataract and obesity: a literature review

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Purpose: The study aim to review the present literature about the association between obesity and cataracts.

Method: A review of the literature was performed using PubMed and Lilacs as databases from July of 1966 to April of 2016. For the research, the following MeSh terms were used: ("Obesity"[Mesh]) AND "Cataract"[Mesh] and only articles in English or Spanish were included. In total, the search shows 52 articles, which were analyzed based on their title and abstract, and selected according to their relevance to the subject of study.

Results: Overweight and obesity are associated with a wide range of chronic diseases including diabetes, metabolic syndrome and cardiovascular diseases. However, some studies have recently tried to identify the association between obesity and other condition: cataract. A study performed in US shown that, after adjusting for diabetes, participants with BMI greater than or equal to 30 kg/m² had a 23% higher risk of developing any type of cataract, and a 68% higher risk of PSC cataract. Furthermore, another study demonstrates that obesity was associated with all cataract subtypes whereas overweight was only associated with PSC cataract (52% increase in the risk of PSC cataract). Despite the lack of knowledge about the mechanism of how obesity influence the cataractogenesis, studies performed in obese rats (WNIN/Ob) showed results that indicated increased susceptibility toward heat- or UV-induced aggregation of lens proteins in obese animals.

Conclusion: Notwithstanding some controversies about the subject, most of the studies have shown a positive association between cataract and obesity. Moreover, the majority of the studies agree that the association with PSC cataract is stronger than with other types. However, more studies have to be performed to enhance the knowledge about the subject.

EP-CAT-202

Comparative analysis to evaluate visual performance of two multifocal intraocular lenses: Acrysof IQ Restor +3.0D and AT LISA tri 839MP

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Purpose: To assess clinical outcomes of patients that underwent standard cataract surgery implanted with two different intraocular lenses (IOLs).

Method: In this prospective and retrospective study we included 56 eyes of 28 bilateral cataract patients aged between 49 and 72. According to the IOL implanted, two groups were differentiated: group A, implanted with Acrysof IQ Restor +3.0D IOL and group B, AT LISA tri 839MP IOL. Distance, inter-

mediate and near uncorrected visual acuity (VA) under mesopic and photopic conditions, contrast sensitivity under mesopic and photopic conditions and defocus curve were tested for each IOL. The examination visit was performed 6 months to 2 years after surgery. All patients completed a satisfaction questionnaire.

Results: Distance uncorrected VA improved significantly in both groups post-operatively ($p < 0.01$). Statistically significant differences were observed between groups for near uncorrected VA in photopic conditions, with better values for group A ($p < 0.05$). No statistically significant differences were found for distance and intermediate uncorrected VA, but a tendency of better values in group B was observed for intermediate VA. Similar results for contrast sensitivity were found between groups. The AT LISA Tri provides a better profile of defocus curve.

Conclusion: The AT LISA Tri and Acrysof IQ Restor +3.0D IOLs provided good visual performance in distance, intermediate and near VA as well as results for defocus curve and contrast sensitivity. High satisfaction was reported in the questionnaire by all patients.

EP-CAT-203

Early intraocular pressure rise after phacoemulsification

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Purpose: To examine the changes in intraocular pressure (IOP) in the early period after uneventful phacoemulsification surgery in normal eyes.

Method: The study included 106 eyes with patients average age 71.34 ± 6.80 , the intraocular pressure was measured preoperatively as well as 4, 24 hours and 7 days after phacoemulsification and posterior chamber lens implantation. Each of 106 patients received same preoperative and postoperative medication and was operated by the same surgeon. The patients were operated with clear cornea incision.

Results: The pressure increase from a mean value of 14.67 ± 1.92 mmHg preoperatively to the maximum 4 hours after surgery 23.31 ± 7.13 mmHg differ significantly ($p < 0.05$) The increase of IOP after 24 hours was 19.14 ± 5.01 mmHg and also statistically significant ($p < 0.05$). 7 days after phacoemulsification we have normalization of intraocular pressure and mean values of 16.32 ± 2.97 .

Conclusion: The intraocular pressure rise after phacoemulsification and posterior chamber lens implantation was detected in every eye. Spike was reached after 4 hours after surgery and after 7 days IOP was normalized. Although patients without optic nerve damage seem to tolerate transient increases in IOP without problems we must be aware and understand the various treatment options for elevated intraocular pressure. It is difficult to predict postoperatively which patients are in a high-risk group. It is necessary to carefully observe IOP leaps and their influence on postoperative visual acuity.

EP-CAT-204

Intracameral mydriatics and analgesics in cataract surgery

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Purpose: The objective of the study was to evaluate if intracameral injection of Mydrane (tropicamide 0,02%, phenylephrine 0,31% and lidocaine 1%) is as safe and effective as conventional topical mydriatics and analgesics for cataract surgery?

Method: In this randomised controlled study 80 consecutive patients undergoing cataract phacoemulsification with intraocular lens implantation were included. Fourty patients (Group 1) received conventional topical mydriatics (tropicamide 1%, phenylephrine 10 % and cyclopentolate 1%) repeated three times and fourty patients (Group 2) received 0,2 ml of intracameral Mydrane. Patients with pseudoexfoliation syndrome, primary open angle glaucoma, mature cataract as well as diabetic patients were not excluded from the study. Initial pupil size, pupil size without additional mydriatics at the beginning of the procedure and after Ophthalmic Viscosurgical Device injection into the anterior chamber as well as pupil size after phacoemulsification and IOL insertion, endothelial cell loss, corneal oedema and anterior chamber flare were evaluated.

Results: Capsulorhexis without additional mydriatics was performed in 97,5% of patients in Group 1 and in 95% of patients in Group 2. In both groups patients achieved adequate mydriasis during capsulorhexis, phacoemulsification and IOL insertion. In Group 2 pupil size at the beginning of the procedure was smaller than in Group 1, however during IOL insertion pupil size was larger in Group 2 than in Group 1. Endothelial cell loss was 397,7 cells per square millimeter in Group 1 and 378,2 cells per square millimeter in Group 2 respectively.

Conclusion: This study demonstrates that Mydrane can be safe and effective alternative to a standard topical mydriatics and analgesics and helps to maintain adequate mydriasis during cataract surgery without intra-operative pupil constriction even in patients with glaucoma and pseudoexfoliation syndrome.

EP-CAT-206

Influence of preexisting corneal astigmatism on refractive outcome in patients after multifocal IOL implantation

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Purpose: to evaluate the influence of preexisting corneal astigmatism on refractive outcome after cataract surgery with multifocal IOL implantation.

Method: This research included 26 patients (32 eyes) 18 female, 14 male after cataract surgery with multifocal IOL implantation (AcrySof ReSTOR IOL) with different types of refraction/. Age ranged $59.3 \pm 8,6$, UCVA before surgery was $0,13 \pm 0,11$, BCVA was $0,85 \pm 0,08$, SE $-3,39 \pm 3,43$, preexisting corneal astigmatism (keratopography) was $-1,13 \pm 0,49$. Standard Phacoemulsification procedure was performed. Follow-up terms were after 1,3, 6 month.

Results: All patients remained satisfied and showed stable refractive results after surgical intervention. The UCVA after was $0,95 \pm 0,08$ (95%). SE $0,31 \pm 0,28$. corneal astigmatism (keratopography) $-0,56 \pm 0,29$,

Conclusion: Preexisting corneal astigmatism (less than 1D) showed no influence on refractive outcome in patients after cataract surgery with multifocal IOL implantation and showed predictable and stable effect in 95%.

EP-CAT-207

Surgically-induced astigmatism after bimanual phacoemulsification through 1.4 mm microincision and coaxial phacoemulsification through 1.8 mm microincision: a comparative study

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Purpose: To compare surgically induced astigmatism (SIA) after bimanual 1.4 mm microincision cataract surgery (B-MICS) and coaxial 1.8 mm microincision cataract surgery (C-MICS).

Methods: A total of 49 eyes of 49 consecutive patients were enrolled in this prospective, single-center study. The examined group consisted of 27 eyes of 27 patients who had uneventful B- MICS surgery through a 1.4 mm clear corneal microincision.

The control group consisted of 22 eyes of 22 patients who had uneventful C-MICS surgery through a 1.8 mm clear corneal microincision.

In all patients an aspheric Incise® IOL MJ14T (Bausch & Lomb) intraocular lens was implanted. All surgeries were performed by two experienced surgeons. The control examinations were performed 7, 30 and 90 days postoperatively. Surgically induced astigmatism was calculated using vector analysis, and uncorrected and best corrected visual acuities were evaluated.

Results: In vector analysis the difference in mean SIA between the groups was significant, which suggests that wound-assisted injection technique through 1.4 mm corneal microincision in bimanual phacoemulsification induces a higher value of SIA than 1.8 mm microincision in coaxial MICS.

Conclusions: The surgically induced astigmatism after bimanual 1.4 mm microincision cataract surgery and coaxial 1.8 mm microincision cataract surgery (C-MICS) were minimal, and visual outcomes were very good.

EP-CAT-208

Optimizing combined spherical and astigmatic targets in cataract surgery with UniversIOL

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Purpose: To simultaneously optimize outcome on spherical and astigmatic residual targets in refractive cataract surgery.

Methods: Global optimization algorithms are introduced and implemented and compared to sequential algorithms that minimize sphere error first followed by minimizing residual astigmatism. The methods are compared on 20 eyes undergoing cataract surgery with a toric IOL implant.

Results: The simultaneous optimization of spherical and astigmatic residuals errors is superior to the usual methods of sequential minimization. The use of the UniversIOL calculator makes the application of the method transparent to the surgeon.

Conclusion: Better refractive results in cataract surgery are possible with a global simultaneous optimization of sphere and astigmatic residuals using a powerful tool such as UniversIOL.

EP-CAT-209

In-and-out suture technique for IOL scleral fixation

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Purpose: To introduce a new technique of scleral fixation of intraocular lens.

Method: We performed simple additional tie near IOL haptic and evaluate the stability of the IOL in vitro and in vivo.

Results: The procedure was simple, safe and effective and patients showed good IOL centration.

Conclusion: This technique could be useful in IOL scleral fixation to prevent decentration and tilt of IOL and improve postoperative IOL stability and accuracy in refraction. No additional complication is expected by this technique.

EP-CAT-210

The extra reading benefit of WIOL-CF polyfocal bioanalogic lens implantation in patients with macular pathologies

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Purpose: To compare the actual amount of benefit of WIOL-CF polyfocal bioanalogic lens implantation on reading functions relatively to impaired distance vision in patients with maculopathy

Method: 15 healthy cataract surgery patients (30 eyes) and 10 patients with cataract and mild maculopathy (20 eyes) were assigned to have bilateral implantation of WIOL-CF polyfocal bioanalogic lens in the capsular bag. The main study outcomes were assessed at 6 month follow-up visit and included uncorrected distance, intermediate (70cm) and near (40cm) visual acuity. To assess the amount of surgery benefit on reading functions relatively to post-operative distance vision, we compared the inclination of linear regression curves from the data of both groups

Results: The difference between maculopathy and healthy group was statistically significant for UCDVA ($p=0,02$) and UCIVA ($p=0,002$), but was not significant for UCNVA ($p=0,47$). Thus, the benefit of surgery regarding UCNVA relatively to distance VA is better for maculopathy patients.

Conclusion: Cataract extraction with binocular WIOL-CF polyfocal bioanalogic lens implantation in patients with maculopathy provides spectacle free vision at all distances and an extra benefit on close distance relatively to impaired distance visual acuity.

EP-CAT-211

Polymorphism rs2010963 GENE VEGF in patients with cataract and diabetic retinopathy determine the level vasalendothelial Vessels Growth Factor (VEGF)

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Purpose: Identify the influence of gene polymorphisms VEGFA the level of VEGF in eye fluids internally (BOP) with cataract and diabetic retinopathy (DR) in the Ukrainian population.

Method: 200 patients who were operated on cataracts. The first group consisted of 98 patients with cataract alone; Second - 38 patients with diabetes mellitus (DM) type 2, but without DR; 3rd group - 32 patients with unproliferative DR and the fourth group - 32 patients with proliferative DR. Polymorphic variants of VEGF gene was determined by PCR in real time (TaqMan® SNP Genotyping Assay, Life-technologies; USA). The concentration of VEGF-A (pg / ml) were determined by ELISA (eBioscience, producer Bender MedSystems, USA).

Results: Patients with 2nd and 3rd groups VEGF level was respectively 4.5 and 4.8 times higher than in group 1 ($p < 0,001$). Patients 4th group was defined maximum values that exceed those in the 2nd and 3rd group 1.5 times, and the level in group 1 - in 7.0 times ($p < 0,05$). The level of VEGF patients with type 2 diabetes without signs of retinopathy (Group 2) especially did not differ from patients with type 2 diabetes in the presence unproliferative DR (Group 3). Patients of the 1st group of carriers of the mutant genotype + 405S / C was marked maximum in comparison with other genotypes level of VEGF ($p < 0,001$). Behold, the trend was inherent and other groups, but mostly it was shown in patients with 4th group in which VEGF level was 2.5 times higher in carriers of the mutant genotype (+ 405C / C) compared to the ancestral genotype (+ 405G / G).

Conclusion: Thus, in patients with cataract and type 2 diabetes, compared to patients only to cataract was significantly higher VEGF levels in the BOP; this pattern is most pronounced in the conditions and the presence of proliferative DR in carriers of the mutant homozygotes + 405S / C.

EP-CAT-212

Benchmarking of both the medical outcome and patient satisfaction in the ambulant cataract surgery

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Purpose: This study in the field of health services research aims at creating transparency of the outcome in the outpatient cataract surgery across Germany, which represents the prerequisite to improve the quality in patient care on a nationwide scale. With the help of this study we are able to provide cataract surgeons with the necessary information about the objective and subjective outcome of their surgery.

Method: Cooperating ophthalmologists documented medical and psychological data (through a face-to-face interview) across the whole cataract treatment cycle. Afterwards, different quality characteristics in detailed areas were analyzed for each surgery center and compared with the results of other surgery centers. Additionally, data was analyzed over time.

Results: Our results point to a high-quality outpatient cataract surgery in Germany. This is reflected by a positive assessment of the outcome of the surgery by the patients in almost all participating surgery centers. Furthermore, the postoperative visual acuity c.c. was greater than 0.8 for 75% of the surgeries across all surgery centers. However, only 58% of the surgeries reached a refraction close to the target refraction (i.e. within ± 0.5 diopters of the tar-

get refraction). Notably, objective outcome varied across surgery centers. Comparing data from 2015 with data from 2016 we also found that objective outcome seemed to improve over time.

Conclusion: These results demonstrate the necessity to analyze the outcome of the cataract surgery in more detail. In particular, it should be examined which factors are responsible for the gain of visual acuity and for achieving target refraction. It is also important to investigate how these factors and the objective outcome are interrelated. Such detailed analyses may reveal means to further optimize outpatient cataract surgery in Germany.

EP-CAT-213

Gene effect polymorphism AKR1B1 to development of cataract and diabetic retinopathy

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Purpose: The gene coding for the synthesis of aldose reductase, - AKR1B1 localized on 7th chromosomes (7q35), and a number of its association with polymorphisms with the development of DR, including - SNP rs759853 and rs9640883. For these polymorphisms identified association with the age of patients, duration of diabetes, and the risk of DR, which, however, differs significantly for different populations. Thus, the purpose was to identify the role of genetic polymorphisms of the gene AKR1B1 (rs759853ta and rs9640883) in the DR in the Ukrainian population.

Method: In total, the study attracted 409 people. The first group consisted of 98 people with cataract without diabetes. The second group - 76 patients with stage I DR 3rd group - 64 patients with unproliferative DR (II, III and stage IV). 4th group - 64 patients with proliferative DR. Polymorphic variants AKR1B1 gene was determined by polymerase chain reaction (PCR) in real time using reagents TaqMan®SNP Genotyping Assay, Life-technologies (USA).

Results: Overall redistribution genotype polymorphism rs759853 showed that the groups has been a general decrease chances ancestral genotype G / G in the background increase the chance of cataract heterozygotes (1.3 times) and in diabetes without retinopathy (1.9 times), while under conditions of DR significantly (in 3,3-3,9 times) increased the chances of mutant homozygotes A / A. Thus, increasing the frequency of heterozygotes was accompanied by the development of cataracts and diabetic retinopathy without, while the increase in mutant homozygotes - development of DR, and more - proliferative its options. The presence of DR was accompanied by a general lack of minor homozygote A / A polymorphism rs9640883 (the number of such patients was 128 persons), which allows suggest a protective effect.

Conclusion: For the first time in the Ukrainian population results showed the importance of allelic polymorphism in the gene AKR1B1 of cataract, diabetes and DR.

EP-CAT-214

Long-term results of intraocular lens Concept 360 from CornealNovak J.^{1,2}¹NPK a.s., Department of Ophthalmology, Pardubice, Czech Republic,²University of Pardubice, Pardubice, Czech Republic

Purpose: The *Concept 360 intraocular lens (IOL)*, which was designed by Dr Philippe Sourdille in 2003, is a single-piece, hydrophilic acrylic IOL that keeps the anterior capsule away from the IOL optic; the six haptic components with a 10-degree posterior optic-haptic angulation also create the same effect of a capsular tension ring preventing PCO. Aim of investigation was to analyse 12 years results after IOL Corneal Concept 360 implantation and complete lens epithelial cells (LECs) aspiration from the lens capsule.

Methods: Prospective study of 10 eyes (8 patients) after Corneal Concept 360 IOL implantation concerned with an incidence of secondary cataract evolution. Phaco cataract surgery and gentle aspiration of the LECs using special 5-holes aspirating canule in 360 degree including equatorial region was performed by one surgeon in 2004. Examination after 1,5, 10 and 12 years: visual acuity, Pentacam (lens and capsule opacity, AC depth, iridocorneal angle), analysis of the image in retroillumination, AS-OCT of the IOL, OCT of the macula.

Results: BCVA {mean±SD} before surgery=0,42±0,20. 12years after surgery BCVA=0,94±0,12. No YAG capsulotomy. IOL opacity=5.3±0.49%, no glistenings. Space between the posterior IOL surface and posterior capsule of less than 50um only in 1 eye. No fibrosis of the anterior CCC edge. Only single macrophages on the posterior capsule or in the periphery behind square edge.

Conclusions: Combination of a specific design of the IOL and LECs aspiration is considered by us as a certain prophylactic method against secondary cataract evolution. Concept 360 from Corneal was one of the best world IOL projects with excellent design and stable hydrophilic acrylic material.

EP-CAT-215

Hill RBF performance with PCI measurements - comparison with SRK/T and Haigis formulasBarros S.¹, Miranda A.¹, Parreira S.¹, Lopes D.², Machado I.², Pereira M.³, Campos N.²¹Hospital Garcia de Orta, Centro de Responsabilidade de Oftalmologia, Almada, Portugal, ²Hospital Garcia de Orta, Almada, Portugal, ³Hospital Garcia de Orta, Centro de Responsabilidade Garcia de Orta, Almada, Portugal

Purpose: Cataract surgery is the most widely surgery performed in ophthalmology. Targeting emetropia is one of the main goals and several intraocular (IOL) lens power calculation formulas are in use today. Our purpose is to evaluate the accuracy of Hill-RBF method compared with SRK/T and Haigis formulas.

Method: Retrospective case series of 112 patients. IOL power formula predictions with observed manifest refractions after cataract surgery were compared using Hill-RBF method, SRK/T and Haigis formulas. The PCI device used was IOLMaster 500. Formulas were ranked according to 5 parameters: mean prediction error, mean absolute error, standard deviation, percentage of final refractions within ±0,50D and ±1,00D of the predicted value

Results: Following methods published in previous reports, formulas were ranked according to standard deviation of the prediction error, and the results were as follows: Hill-RBF (0,09); SRK/T (0,61) and Haigis (0,85). Significant differences were also observed in the percentage of final refractions within ± 0,50D and ±1,00D. Comparing Hill-RBF with SRK/T and Haigis the results

were as follows: 90% vs 64% vs 57% final refractions within ± 0,50D and 90% vs 87% vs 80% final refractions within ± 1,00D.

Other parameters evaluated for Hill-RBF, SRK/T and Haigis were and mean prediction error (respectively 0,05 vs 0,02 vs 0,004) and mean absolute error (respectively 0,35 vs 0,417 vs 0,412).

Conclusion: Hill-RBF method performed better than SRK/T and Haigis using PCI device and should be considered in daily practice. Large case series would be valuable to corroborate these results.

EP-CAT-216

A training device for capsulorrhexis by residents

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Purpose: To assess the use by residents of a specially designed silicone ring for producing a predictable centered continuous curvilinear capsulorrhexis with a diameter of 5 mm when performing cataract phacoemulsification.

Setting: A small cohort study.

Method: In 20 consecutive eyes with cataract, operated by residents under supervision, before the stage of capsulorrhexis a specially designed silicone ring (Verus Capsulorrhexis Device, Mile High Ophthalmics) was implanted in the anterior chamber. A continuous round capsulorrhexis was performed by the resident along its inner edge serving as a guide.

Results: There were no complications during the stage of capsulorrhexis. The produced openings of the anterior capsule were centered, roundish, with a diameter close to 5 mm.

The residents reported that the ring was helpful and it increased their self confidence for performing a complication-free capsulorrhexis.

Conclusion: The used calibrated silicone ring enables repeatable, centered, round and complication-free capsulorrhexis with a diameter of around 5 mm. It represents a helpful teaching device for training residents in cataract surgery.

EP-CAT-217

Calcification of hydrophilic acrylic intraocular lenses with a hydrophobic surface following uneventful Descemet's stripping automated endothelial keratoplastyKołodziejka U.¹, Udziela M.¹, Mendiak E.², Rawski M.², Skrzypiec K.², Gumieniczek A.³, Szaflik J.P.¹¹Medical University of Warsaw, Department of Ophthalmology, Warsaw, Poland, ²Maria Curie- Skłodowska University, Analytical Laboratory, Faculty of Chemistry, Lublin, Poland, ³Medical University of Lublin, Department of Medicinal Chemistry, Lublin, Poland

Purpose: To describe clinical and laboratory findings in series of cases of intraocular lens (IOL) opacification after Descemet's stripping automated endothelial keratoplasty (DSAEK)

Design: Retrospective, noncomparative, observational case series.

Method: 36 cases of IOL calcification after uneventful DSAEK were reported (31 Lentis LS-302-Y, 12 Lentis L-302-1; Oculentis GmbH, Berlin, Germany). All affected lenses were hydrophilic acrylic with a hydrophobic surface. Laboratory analysis of 2 explanted and 1 new IOL were performed with optical microscopy, optical profilometry, and scanning electron microscopy (SEM) with Energy Dispersive X-Ray Analysis (EDX) method.

Results: Corneal decompensation secondary to Fuchs' endothelial dystrophy (FED) (35 eyes) or posterior polymorphous dystrophy (1 eye) and cataract formation were indications for the surgery. In all cases, central IOL opacification consisted of fine granular areas confined to the pupillary zone of the superficial, anterior IOL surface, were diagnosed. Texture imaging and evaluation of surface roughness indicates that the anterior surface of affected IOL is significantly rougher than the posterior surface and the surface of new IOL. Surface roughness $R_a = 0,88 \mu\text{m}$ vs $R_a = 0.0049 \mu\text{m}$ vs $R_a = 0.0045 \mu\text{m}$. The morphology and character of surface irregularity indicate that formation of lumps starts inside the IOL's material. The deformation of the polymer's surface is secondary to growth of crystal granules in subsurface area. SEM/EDX analyses confirmed the presence of granular deposits composed of calcium and phosphorus. In one affected IOL significant amount of silicon was detected. Maximal depth of clusters presence was $35 \mu\text{m}$, the highest concentration was found just under the hydrophobic membrane.

Conclusions: Because of increased risk of opacification after DSAEK, hydrophilic acrylic intraocular lenses should be avoided in patients with endothelial disorders.

ELECTRONIC POSTER PRESENTATIONS CONTACT LENSES

EP-COL-220

Cyclodextrin-decorated contact lenses for controlled release of drugs and demulcents

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Purpose: To design a unique material for contact lenses (CL) which could be processed using well established CL manufacturing technologies but which, at the same time, could simultaneously perform as versatile drug/demulcent release platform. This designed material benefits from the incorporation of cyclodextrins as hosting agents, but without hydrogel network structure alteration.

Overall, it can be considered to be a game-changing material agent for the CL state-of-the-art.

Method: Hydroxyethyl methacrylate-co-glycidyl methacrylate hydrogels were synthesized and then post-functionalized with cyclodextrin. Subsequent uptake/release tests of α -lipoic acid, an antioxidant molecule which preserves corneal sensitivity, essential for the normal physiological function of the eye surface were carried out. Optimized composition was used to synthesize bottom discs at industrial scale which were transformed in CL applying the lathe cutting method.

The cyclodextrin-decorated CL were evaluated regarding optical properties, oxygen permeability, swelling, ocular irritation, drug release and cornea penetration.

Results: The designed cyclodextrin-decorated hydrogels showed full industrial-adequate properties to be used as CL, rendering remarkably high load amounts of α -lipoic acid and also sustained release for several hours. Bovine corneal permeability tests demonstrated that the released α -lipoic acid can efficiently accumulate into the cornea and eventually cross it, despite low concentration environments on lachrymal fluid.

Conclusion: The designed material shows excellent processability properties and also remarkable affinity for target active substances. This proves that cyclodextrin-decorated CL, be this either with or without graduation, offers new

ways for the therapeutics of the eye pathologies and also for the prevention of CL discomfort syndrome, just by adequately choosing the cyclodextrin that best fits to the requirements of each drug/demulcent release.

EP-COL-221

Progressive myopia and retinal defocus - the need to be addressed urgently

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Myopia is a significant, prevalent disease in children with increasing rates of progression. With over 80 million reported myopic children world wide there are considerable socio-economical and public health concerns.

Myopia is generally classified into two groups: non-pathologic and pathologic myopia. Both groups have separate disease processes, clinical features, and prognoses. Non-pathological myopia is also commonly referred to as physiological, simple or school myopia. The degree of non-pathologic myopia is usually minimal to moderate (< 6.00 diopters) and onset usually begins during childhood or adolescence. Myopic progression generally continues throughout the adolescent growth period and slows or becomes stable early in the second decade.

Pathologic myopia is generally classified as a high myopic refractive error that is progressive and generally presents very early in childhood. Pathologic myopia is usually defined as spherical equivalent > 6.00 diopters or axial length >26.5mm. Patients with high axial myopia are at a greater risk of developing progressive retinal degeneration and other vision threatening pathology.

The standard treatment for myopia in children is glasses.

One of the initial theories regarding defocus and myopia development suggests that if myopes have less accurate accommodation responses than emmetropes then the larger accommodation lag may provide a greater blur error signal encouraging the eye to grow axially towards the more distant focal point, in turn producing myopia.

It is the objective rather than subjective depth of focus that is likely to be the relevant measure with respect to the threshold for eye growth and therefore any difference in this between refractive groups is potentially vitally important in understanding why an eye becomes myopic.

A new soft contact lens design with reversed geometry, asphericity and eccentricity will be demonstrated that will slow down the progression of the myopia.

EP-COL-222

The effect of silicone hydrogel contact lenses on corneal subbasal nerve plexus and corneal sensitivity

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Purpose: To compare the changes in subbasal nerve density and morphology, and corneal sensitivity between corneas of daily silicon hydrogel (SiH) contact lens wearers and those of non-contact lens wearers.

Method: Twenty eyes of 20 daily SiH contact lens wearers (6 months duration) and 20 eyes of age-matched control subjects were recruited this prospective longitudinal study. Corneal sub-basal nerves and basal epithelial cell layer were evaluated using in vivo confocal microscopy (IVCM). Central corneal sensitivity was measured by Cochet-Bonnet esthesiometry. IVCM and Cochet-Bonnet esthesiometry were performed prior to and at 6-month time

points following contact lens use. Two-way repeated measures ANOVA, Chi-square, and Wilcoxon Signed Ranks tests were used for statistical analysis.

A post-hoc Bonferroni test was used to examine for multiple comparisons.

Results: The mean age of subjects who wear contact lens and control subjects were 21.8 ± 1.8 years (range= 19-24 y) and 21.5 ± 2.3 years (range= 20-24 y), respectively ($p=0.579$). There was no significant difference among two groups respect to the age ($p=0.579$) and gender ($p=1.000$). None of the parameters of the mean epithelial cell density ($p=0.898$ and $p=0.147$, respectively), central corneal sensitivity ($p=0.968$ and $p=1.000$, respectively), total subbasal nerve density ($p=0.655$ and $p=0.785$, respectively), long nerve fiber ($p=0.564$ and $p=1.000$, respectively), and nerve tortuosity ($p=1.000$, for both group) were not statistically significant at the 6-month visit as compared to baseline levels both in subjects who wear contact lens and healthy controls.

Conclusion: Long-term daily SiH contact lens wear does not affect corneal epithelial cell density, subbasal nerve plexus, and central corneal sensitivity.

EP-COL-223

Bioinspired epalrestat-eluting contact lenses to address diabetic-eye complications

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Purpose: To design contact lenses (CLs) groups that can load/release epalrestat, an aldose reductase inhibitor, and thus be useful for the local prophylaxis/treatment of diabetes-related ocular pathologies, being an alternative to systemic (oral) or intravitreal drug administration.

Method: Several sets of silicone hydrogels were prepared with specific receptors for the drug following a bioinspired strategy that try to resemble the aldose reductase binding sites in the structure of the hydrogel. Epalrestat was incorporated before or after polymerization and drug loading and release profiles compared. All sets were evaluated regarding optical properties, oxygen permeability, swelling, cytocompatibility, ocular irritation, and drug penetration through bovine cornea.

Results: The bioinspired silicone hydrogels showed adequate properties to be used as CLs. Affinity for epalrestat strongly depended on the content in functional monomers, which endowed the hydrogels with prolonged release in 0.9% NaCl for one week, both after synthesis and after being re-loaded. Bovine corneal permeability tests demonstrated that epalrestat released from the hydrogels can efficiently accumulate into the cornea in spite the concentrations provided on lachrymal fluid were lower than those attained immediately after instillation of concentrated eyedrops.

Conclusion: Silicone hydrogel CLs functionalized with bioinspired chemical groups represent a first attempt to design CLs adapted to the needs of diabetic eyes, acting as controlled release platforms of epalrestat, promoting drug accumulation and diffusion into the cornea.

EP-COL-224

Possible effect of Induced Higher Order Aberrations (HOA) on myopia control by OrthoKeratology

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Purpose: To evaluate induced HOA at the time of OrthoKeratology correction of Myopia in teenagers group of patients and possible influence on the Myopia Control (stabilization or slowing the progression).

Method: 50 Myopic patients (100 eyes) age 10 - 18 years (mean 14.2 ± 2.8) were corrected by Paragon CRT Lenses. Standard ophthalmological examinations including BUVA, BCVA, refraction, U/S Biometry, Corneal Topography and Aberrometry were done at the beginning (base line), 1, 3, 6, 12 and 24 months after the beginning of Ortho-K Treatment. Mean initial refraction was Sph: $(-)\ 3.71 \pm 1.27D$, Cyl: $(-)\ 0.62D \pm 0.41D$. Mean HOA (rms) (6.0mm pupil) were $0.346 \pm 0.171\mu\text{m}$, Mean Spherical HOA (SA): $0.024 \pm 0.011\mu\text{m}$. Mean accommodative reserve of the ciliary muscle was $2.7 \pm 1.8 D$. All patients finished 24 months of follow up.

Results: After 1 month of therapy all patients got stable refraction (mean: Sph (+) $0.11 \pm 0.12D$), BUVA 20/20 or better, stable keratometry and corneal topography.

None of the patients progressed for more than $(-)\ 0.5D/\text{year}$. Total HOA increased: (mean) to $1.022 \pm 0.205\mu\text{m}$, SA - $0.22 \pm 0.087\mu\text{m}$.

All induced SA were positive. Mean accommodative reserve of the ciliary muscle increased to $6.9 \pm 1.4D$, and became comparable with the age norm. No significant complications occurred at the time of follow up.

Conclusion: Ortho-K treatment is safe and effective in correcting and stabilizing the myopia in teenager group of patients. Myopia control (stabilization) in this group of patients is associated with the increasing strength of ciliary muscle. Positive SA are shifting the best image plain (focus) of the eye towards myopia. At the time of accommodation the pupil constricts (accommodative miosis). With constricted pupil the level of HOA (including SA) decreased. Focus is shifted towards hyperopia. Ciliary muscle has to constrict more for the accommodation. This mechanism can be responsible for the increasing of ciliary muscle increasing strength and Myopia Control.

ELECTRONIC POSTER PRESENTATIONS CORNEA

EP-COR-228

Protective effects of green tea catechins of the ultraviolet rays-induced cytotoxicity in human corneal epithelium cells

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Purpose: The ocular surface is directly exposed to oxygen and ultraviolet rays (UV), and caused to strong photo-oxidation stress. As a result, photokeratitis and pterygium are induced. The production of free radicals and reactive oxygen species (ROS) is presumed to be caused by UV-induced cytotoxicity. In recent years, it is reported that tea catechins have the antioxidant action. We examined the mechanism of UV irradiation-induced cytotoxicity and the protective effects of (-)-Epigallocatechin Gallate (EGCG) and (-)-Epigallocatechin

3-(3"-O-Methyl) Gallate (EGCG 3"Me) in cultured human corneal epithelial (HCE-T) cells against apoptosis.

Methods: HCE-T cells were irradiated under UV lamps emitting 312 nm radiation (4.94 mW/cm^2 , 296 mJ/cm^2). UV absorption spectrums were measured from 250 to 400nm. The measurement of membrane lipid peroxide, tumor necrosis factor alpha (TNF- α) generation, ROS generation, mitochondrial membrane potential, Cytochrome-c generation, Casp-3, -8 and -9 activities after UV irradiation were conducted and the depression effect of EGCG and EGCG3"Me were examined.

Results: The UV absorption spectrum of EGCG and EGCG3"Me was confirmed to around 312 nm radiation and UV absorption of catechins increased with concentration. The measurement of membrane lipid peroxide, TNF- α generation, ROS generation, Casp-3, -8 and -9 activities were increased after UV irradiation and significantly decreased by EGCG/EGCG3"Me pretreatment. However, the measurements of mitochondrial membrane potential and Cytochrome-c generation were not change after UV irradiation.

Conclusion: In this experiment, UV radiation occurred in oxidative stress, activated caspase-3 and -8, induced apoptotic course, and EGCG and EGCG3"Me pretreatment disturb them. These findings suggest that EGCG and EGCG3"Me absorb UV, suppress the apoptotic pathway through caspase-8, and protect HCE-T from UV radiation, that is, EGCG and EGCG3"Me play a role of UV adsorbent.

EP-COR-229

Ocular surface alterations and characteristics of corneal subbasal nerve plexus in patients with myasthenia gravis

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Purpose: To evaluate the ocular surface characteristics and corneal subbasal nerves in patients with myasthenia gravis (MG).

Method: Twenty-one eyes of 21 patients with MG and 20 eyes of 20 healthy control subjects were enrolled in this prospective cross-sectional study. All participants underwent ocular surface tests in the order of tear break-up time (BUT), lissamine green (LG) staining, Schirmer I test with anesthesia, and ocular surface disease index (OSDI) questionnaire. The Cochet-Bonnet esthesiometer was used to measure corneal sensitivity. Subbasal corneal nerves were evaluated using *in vivo* confocal microscopy (IVCM). Student t test, Mann-Whitney U test, chi-squared test and Kolmogorov-Smirnov test were used in statistical evaluations.

Results: Patients with MG had higher OSDI (13.9 ± 15.0 vs. 1.4 ± 2.2 , respectively, $p < 0.001$) and LG staining scores (0.6 ± 0.4 vs. 0.2 ± 0.4 , respectively, $p = 0.007$), compared with those of control subjects. BUT scores (9.3 ± 3.0 vs. 9.9 ± 1.9 , respectively, $p = 0.481$) and Schirmer test results (16.5 ± 9.2 vs. 19.3 ± 8.4 , respectively, $p = 0.323$) were similar between two groups. Corneal sensation was 0.96 g/mm^2 in all eyes. Patients with MG had lower total nerve density (1956.1 ± 373.3 vs. 2277.9 ± 405.0 , respectively, $p = 0.012$).

Conclusion: The ocular surface parameters and corneal subbasal nerves appear to be altered in patients with MG. These patients should be evaluated in terms of ocular surface disease.

EP-COR-230

UV damage of the eye after acute sunburn - microstructural observations by *in vivo* confocal microscopy

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Purpose: To evaluate and follow UV damage of the ocular surface of subjects with acute skin sun burn at microstructural level utilising *in vivo* confocal microscopy.

Method: Fifty eyes of 25 subjects were prospectively recruited over two summer periods at 43° latitude at the Black Sea via social media advertising. The subjects had minimum grade 1 skin burn of the face, neck and/or head. Subject were examined clinically, including grading of the conjunctival hyperaemia. Microstructural evaluation was based on examination with laser scanning *in vivo* confocal microscopy (HRT II Rostock corneal module) on 5 corneal, 4 conjunctival and 4 lid areas.

Results: The subjects, 9 male and 14 female, aged 25 ± 4 years were recruited. At baseline clinical examination, conjunctival hyperaemia grade 2-3 was encountered in 42 eyes. Microstructural analysis of the cornea at same time point demonstrated decreased basal epithelial density to $5632 \pm 158 \text{ cells/mm}^2$ and unusual cysts measured 12-67 μm in diameter. In the conjunctiva, characteristic cystic lesions with dark centres and bright borders were encountered in all eyes. Those were bigger and denser superiorly. Similar lesions were discovered in the upper lid conjunctiva. Described pathology decreased significantly in two weeks when morphological characteristics of the anterior ocular surface returned to the normal microstructure of age matched subjects.

Conclusion: Acute sun burn of the head and face is associated with microstructural damage of the anterior ocular surface. Although the short term microstructural alteration appears to be reversible, the long term effect might lead to chronic ocular surface disease. Development of methods for anterior ocular surface protection together with increasing the public awareness of sun related damage of the anterior eye could have significant health benefits in the future.

EP-COR-231

Corneal structure and endothelial morphological differences between non-diabetic and type 2 diabetic patients

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Purpose: To analyze and compare corneal structure and endothelial morphological features between patients with and without type 2 diabetes mellitus (DM), and evaluate their relationship with DM duration, glycated hemoglobin (HbA1c) levels and diabetic retinopathy (DR) stage.

Methods: Sixty diabetic and 47 age and sex-matched non-DM patients were enrolled in this cross-sectional study. DM group were analysed according disease duration ($<$ or ≥ 10 years), HbA1c levels ($<$ or $\geq 7\%$) and presence of retinopathy. Central corneal thickness (CCT) and corneal volume were measured by sheimpflug tomography and endothelial cell density (ECD) and morphology (average and coefficient of variation [CV] of cell size, percentage of hexagonal cells) were recorded using non-contact specular microscopy.

Uni and multivariate linear regression analysis were performed to evaluate the relationship between demographical/clinical (age, gender, body mass index [BMI], DM duration, HbA1c levels, smoke history) and ocular variables (axial length [AL], intraocular pressure [IOP], corneal volume, DR) with CCT and ECD.

Results: The mean ECD was lower in DM group when compared to non-DM group, however the differences did not reach statistical significance ($p=0.245$). There was no statistical difference between groups for CCT, corneal volume, percentage of hexagonal cells and CV of cell size. Multivariate linear regression analysis did not show any association between studied variables and ECD. CCT was found to be significantly greater in males ($p<0.001$) and positively associate with corneal volume ($p<0.001$).

Conclusion: This study suggest that DM might reduce corneal ECD; however, we found no evidence that it affects CCT or corneal volume measurements.

EP-COR-232

Coagulation factor XIII in tears and its possible role in corneal wound healing

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Purpose: The effect of different factor XIII (FXIII) concentrations was investigated on wound healing, in vitro on corneal epithelial cells and in vivo in tears of patients following corneal surgeries with different types of wound: phacoemulsification, penetrating keratoplasty (PKP) and photo-refractive keratectomy (PRK).

Method: Scratch-wound assay, proliferation and migration assays were applied to detect the effect of FXIII on wound healing of immortalized corneal epithelial cells. Using a hypersensitive chemiluminescent ELISA method, developed in our laboratory, FXIII complex and subunits were detected in tears of patients before and after different surgical interventions of the cornea, and post surgical angiogenesis and re-epithelization was observed.

Results: The addition of recombinant cellular FXIII (cFXIII, rFXIII-A₂) resulted in a concentration dependent faster healing of the scratch wound. rFXIII-A₂ promoted the proliferation of corneal epithelial cells, but no effect on migration was observed. After corneal surgeries FXIII complex and subunits concentrations increased in tears, then decreased reaching the normal interval at different times after the surgical intervention. After cataract surgery, FXIII concentrations correlated with the inflammation of the eye and the corneal oedema. Slower re-epithelisation of the corneal surface after PRK associated with lower FXIII concentrations. Extremely high FXIII concentrations measured in a few cases after PKP was associated with neovascularization of the normally avascular cornea.

Conclusion: According to our in vitro and in vivo investigations, FXIII present in tear proteome has a beneficial effect on corneal re-epithelisation, which results in decreased period of complaints caused by the corneal erosion. FXIII might be considered as an additional therapy in the treatment of corneal erosions, but long exposition to high FXIII concentrations in tears might induce undesired angiogenesis of the cornea.

EP-COR-233

Comparison of different therapeutic agents in the treatment of corneal epithelial defects - an experimental study

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Purpose: To investigate the effects of three different topical agents on corneal epithelial wound healing.

Method: 24 eyes of 24 female Bal-b/C mice were included. Central corneal epithelial defect was created using a 2 mm trephine. Four groups were formed. By a random pick-up, topical Coenzyme Q10+Vitamin E D- α -tocopheryl polyethylene glycol succinate 4x1 was given to Group A, topical Sodium hyaluronate+Xanthan Gum+0.3 Nethylmicine 4x1 was applied to Group B and topical preservative free Sodium hyaluronate 4x1 was applied to Group C.

Group D was evaluated as control. Biomicroscopical examination and clinical scoring were performed on days 1, 2, and 3. Mice were sacrificed on the third day. Histopathological and electron microscopic examinations were performed.

Results: Although epithelial wound healing was slowest in Group D at the end of the first day, biomicroscopical evaluation revealed similar florescein staining in all groups at days 1 ($p=0.05$), 2 ($p=0.15$) and 3 ($p=0.62$) (Kruskal Wallis test).

Light microscopical evaluation revealed similar limbal and stromal leucocyte infiltration, as well as basal and superficial cell configurations in Groups A, B and C. Group D showed more prominent inflammation and disrupted alignment of the basal and superficial epithelial cells.

Electron microscopy revealed disruption of the intercellular junctions between corneal epithelial cells and vocuolization in Group D.

These findings were absent in Group A and superficial epithelial microvillus configuration as well as corneal epithelial thickness were close to normal. Histological findings in Groups B and C were similar to Group D.

Conclusion: Corneal epithelial wound healing was slowest in the control group at the end of the first day, similar staining was observed in all groups at days 2 and 3.

Light microscopical findings were similar in all treatment groups. Electron microscopy revealed better epithelial regeneration in Group A.

EP-COR-234

Corneal in vivo confocal microscopy in primary Sjögren's syndrome

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Purpose: In vivo Confocal Microscopy (IVCM) allows non invasive high resolution images of corneal nerves and cells, with increasing use in different corneal and ocular surface pathologies.

The aim of this study is to analyze sub-basal corneal nerve plexus in patients with dry eye syndrome associated with primary Sjögren's syndrome (PSS) and in healthy patients, using IVCN.

Method: Cross-sectional observational case-control study of 22 patients with PSS (group 1) and 15 healthy control patients (group 2), matches for age and sex. Evaluation of dry eye symptoms, meniscus and tear film, and the presence of keratitis were performed. Sub-basal plexus was evaluated by IVCN (Heidelberg Retina Tomograph II / Rostock Cornea Module), with the analyses of primary and secondary branches nerve's length, tortuosity and density. The comparison of the means and the correlations between the variables were analyzed using non-parametric tests and Spearman's correlation, respectively.

Results: Sub-basal nerve's length and density were significantly lower in group 1 compared to the group 2 ($p < 0.001$). There was not found statistical significant differences of nerve's tortuosity between the two groups. The length of the nerves correlated positively with their density and with the density of the secondary branches in the two groups under study

Conclusion: Primary Sjögren's Syndrome is associated to morphologic changes in corneal sub-basal nerve plexus. IVCN may be an important tool for the diagnosis and follow-up of patients with dry eye syndrome associated to PSS.

EP-COR-235

The assessment of architecture of clear corneal incision with anterior segment optic coherence tomography in patients with and without stromal hydration

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Purpose: To assess architecture of clear corneal incision with anterior segment optic coherence tomography (AS-OCT) in patients with and without stromal hydration.

Material and methods: Seventy eyes of 80 patients those had been planned to have phacoemulsification and intraocular lens implantation under topical anesthesia, were involved in this study. The main clear corneal incision was done with 2.75 mm corneal knife. During operation corneal hydration was performed in clear main corneal incision of 40 randomized selected patients and stromal hydration was not performed in other 40 patients. The architecture of main clear corneal incision was assessed with AS-OCT at postoperative 1st, 7th, 30th days.

Results: It was observed that corneal thickness at corneal incision region was thicker in eyes with stromal hydration performed at postoperative 1st and 7th days ($p=0.036$ and $p=0.046$). The average main corneal incision lengths were 1.74 ± 0.26 mm and 1.56 ± 0.36 mm in eyes with and without stromal hydration, respectively ($p=0.045$). The epithelial gaping rate, endothelial gaping rate and rate of local detachment of Descemet membrane were 25% (10 patients), 50% (20 patients), 25% (10 patients) at postoperative 1st day in stromal hydration performed clear corneal incisions, respectively.

Conclusion: It could be said that the effect of stromal hydration continues at least seven days along and the pathologies of corneal incision at early post-operative period are observed more frequent in eyes with stromal hydration.

EP-COR-236

The efficacy of different surgical methods of the cryopreserved amniotic membrane fixation

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Purpose: Compare the efficacy of different amniotic membrane transplantation techniques in patients with inflammatory and degenerative pathology of the cornea, according to archival patients cases.

Method: 65 patients underwent cryopreserved amniotic membrane transplantation. Three amniotic membrane transplantation techniques were used: inlay (graft transplantation), onlay (biological covering), sandwich (combined technique). After the operation bandage soft contact lens was put on the corneal surface until completed epithelialization.

Results: Our study showed high efficacy of amniotic membrane transplantation in patients with different pathologies of the cornea (recurrent pterygium, bullous form of endothelial-epithelial corneal dystrophy, keratitis (bacterial, neurotrophic, autoimmune and herpetic) and corneal burns.

In 62 patients (95.4%) positive therapeutic effect was obtained with corneal epithelialization activation, elimination of inflammation and pain, and the absence of pterygium recurrences. It was found that in patients who had underwent inlay-technique of amniotic membrane transplantation, the highest efficiency was noted in patients with herpetic and bacterial ulcers.

In the group of patients who underwent onlay-technique the highest efficiency was noted in patients with endothelial-epithelial corneal dystrophy and neurotrophic keratitis and in patients with sandwich-technique - patients with autoimmune corneal ulcers.

Conclusion: Comparative analysis of the effectiveness of various techniques of amniotic membrane transplantation showed no significant differences in the terms of corneal inflammation and stromal edema elimination, inflammatory infiltration resorption and corneal epithelialization.

EP-COR-237

Evaluation of the use of the amniotic membrana in tertiary hospital in the last 9 years

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Purpose: To analyze the indications and characteristics of amniotic membrane (AM) use in a tertiary hospital.

Method: National transplant unit coordinators were asked for data on patients requiring AM graft and the incidence and characteristics of the patients were analyzed through SPSS statistic 22.

Results: Publications on the use and characteristics of AM have grown exponentially in recent years, with a total of 12573 publications on MA and 1868 in the last 5 years representing 6.7% of publications.

In the last 9 years a total of 388 AM have been used. It should be noted that the data for 2016 were only counted until August of that same year.

The year that less was used MA was in 2008 being 29, nevertheless the following year the maximum peak of 51 grafts was observed. The average use of an amniotic membrane in was 3.3 AM monthly.

46.9% of the MA grafts were placed in women and 53.1% in men with no significant differences between the sexes. The mean age was 57.21 years, and a median age was 63 years. The age range ranges from 10 days of life to 111 years.

It is noteworthy that for recurrent pathology as in stevens-johnson or herpetic pathology, some patients required more than one graft, with a maximum number of 6 grafts.

The use of MA has been very variable within the miscellaneous group, included the reconstruction of glaucomatous blisters, surgery for palpebral or conjunctival reconstruction or corneal infections.

Conclusion: The number of use of AM is stable, and may be due to the incorporation of new products, as the CACICOL. However, the number of indications has increased.

EP-COR-238

Spectacular evolution of a fungal keratitis: a case report

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Purpose: Fungal keratitis is a severe infection of the cornea. It most often occurs on fragile corneas, or in a post-traumatic context. Their evolution under medical treatment alone is often disappointing, with major functional sequelae. We herein present a rare case of a favorable evolution of mycotic keratitis.

Method: A 50-year-old patient came to the emergencies for a painful red eye, with a decrease in visual acuity of the right eye. He had a history of ocular trauma by a vegetal agent which occurred 18 days before. The clinical examination showed a reduced visual acuity to a luminous perception. It also revealed a corneal opacity with blurred edges, corneal edema, and a hollow ulcer reaching the stroma. In the anterior chamber, there was sedimented fibrin, giving an appearance of snowflakes. Moreover, the conjunctiva presented a major hyperaemia over 360 degrees. The rest of the examination was inaccessible.

Results: The patient received fortified Ceftazidime and Vancomycin eye drops. Because of the vegetal trauma, the long interval of occurrence of the symptomatology, and the gravity of the symptoms, an intravenous Voriconazole anti-fungal treatment was initiated, with an oral relay 15 days later. In the 6 months follow-up, we noticed a progressive improvement of the corneal abscess, with improvement of visual acuity at 8/10, at the cost of posterior synechiae, despite the use of cycloplegics.

Conclusion: Fungal keratitis are severe corneal lesions with bad prognosis, and difficult management. Their evolution remains unpredictable, but a well-conducted treatment may allow a favorable outcome in some cases.

EP-COR-239

Efficacy of topical cysteamine in nephropathic cystinosis

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Purpose: The aim of this study is to evaluate the efficacy of topical cysteamine 0.55% eye drops in the treatment of corneal cystine crystals deposits in patients with nephropathic cystinosis.

Method: Thirty two patients with nephropathic cystinosis were prospectively included in the study. Patients with corneal cystinosis were treated with topical cysteamine 0.55% eye drops. They were examined before treatment, on each

monthly visit and after treatment at the last follow up. Photophobia was classified as grade 0 (none) for no photophobia, grade 1 (mild) for photophobia in bright light, grade 2 (moderate) for photophobia in room light and grade 3 (severe) for photophobia in dim light. Corneal cystine crystals were graded as grade 0 = None, grade 1 = 1-10 crystals/mm², grade 2 = 11- 50 crystals/mm², grade 3 = more than 50 crystals/mm². The main Outcome measure was evaluation of photophobia and resolution of corneal cystine crystals.

Results: There were 13 male and 19 female patients. The mean age was 8 years with an age range of 8 months to 19 years. The mean follow up period was 4.1 years with a range of 2 to 8 years. Improvement of photophobia was not clinically significant in symptomatic patients. Patients displayed statistically significant worsening of corneal cystine deposits during the follow up period.

Conclusion: This study has shown that topical 0.55% cysteamine eye drops may have limited effects in decreasing the corneal cystine deposits in patients with severe forms of nephropathic cystinosis.

EP-COR-240

The new trehalose-based eye drops in the treatment of dry eye syndrome

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Purpose: Dry eye syndrome (DES) is polyetiologic disease. The study of the pathogenesis of DES and the ultra-structure of the tear film has shown the necessity to create medications that able not only replace some differentiated layer of the tear film, but also able to promote the regeneration of corneal defects and the relief of inflammatory symptoms. In this regard, it was studied the influence of hypotonic, sterile solution "Thealoz Duo" with a neutral pH, containing 3% trehalose and 0.15% hyaluronic acid on the clinical symptoms of DES.

Method: 22 patients (44 eyes) with moderate and severe DES with the experience of using another artificial tears application within 1-3 years were studied. 10 men (45,5%) and 12 woman (54,5%) at the age of 34 to 70 years (median 50,0) were examined. All patients used drops "Thealoz Duo" 5 times per day for 30 days. All patients underwent ophthalmologic examination and Ocular surface disease index (OSDI) was counted. According to this index patients had moderate and severe DES. Tear film break-up time (TBUT), corneal staining with fluorescein (CSF), tear volume (Shirmer test I) were measured.

Results: After 30 days of "Thealoz Duo" instillation significantly increased the Shirmer test I (in 4,6mm (p=0,000)), TBUT (in 3,7 s.(p=0,000)) and reduced the OSDI in 8,84 points (p=0,000). Corneal staining fluorescein like epitheliopathy was positive on 30 eyes (68,2%). After the treatment the corneal surface epithelialization achieved in 91% of cases and CSF was negative on 40 eyes.

Conclusion: "Thealoz Duo" is an effective drug for the treatment of moderate and severe DES, accompanied by damage of the corneal surface.

EP-COR-241

Penetration repair in graft versus host patient*Dulger E., Emiroğlu R., Altan S.**Near East University, Ophthalmology, Nicosia, Cyprus***Purpose:** Management of penetrated cornea in Graft versus Host patient**Method:** Case Report

Results: Sixty six year old female patient applied with complaining of right eye pain visual deterioration and lacrimation after sunglasses trauma. She had a history of bone marrow transplantation 6 years before and GVH (Graft versus Host) syndrome since 3 years. There were centrally located corneal penetration on her right eye. Five layer of amniotic mebranes are placed on the cornea. Initially sulcus was made on intact corneal layer. First layer was placed on penetrated area and fixed within sulcus. Other layers were placed on the first layer by using tissue glue and sutures. Sterile air were injected in the anterior chamber to form anterior chamber.

Conclusion: GVH causes severe dry eye, corneal neovascularization and thinning which might be easily penetrated by trauma or spontaneously. Amniotic membrane application has advantages as mechanic closure of the wound, and it is also non immunogenic material which is safe in patients with GVH

EP-COR-242

Double lamellar keratoplasty in the treatment of corneal perforations with acellular porcine corneal stroma graft*Huang X., Jin X., Lin L.**Eye Center of 2nd Affiliated Hospital School of Medicine Zhejiang University, Hangzhou, China*

Purpose: To describe a novel double lamellar keratoplasty for corneal perforations by using acellular porcine corneal stroma in emergency situation or shortage of cornea donors.

Method: Corneal perforations were treated by double lamellar keratoplasty. First, perforation was repaired using a very thin layer of human posterior lamellar graft which stored in -80°C or dissected lamellar piece from the same patient health cornea area, 1 mm larger than the perforation, after which one more acellular porcine corneal stroma (APCS) graft was transplanted to treat the ulcer. Nine cases of corneal ulcer perforation were enrolled in this study. One was fungal keratitis, one was alkali burn, others were simple herpes keratitis. Corneal photography, anterior OCT, visual acuity and NCT were documented at each follow-up visit. Epithelialization of APCS graft and any changes and adverse events were recorded to demonstrate the safety and efficacy of APCS in human keratoplasty.

Results: The sealing of the perforation and the re-establishment of the anterior chamber were achieved successfully in all the cases. Visual improvement was achieved in seven cases. Epithelialization occurred in all APCS grafts. Two cases presented partly suture loose and neo-vascularization which solved by suture removed and anti-inflammation treatment. No patients showed any severe adverse reaction or any significant change in postoperative follow up.

Conclusion: Double lamellar keratoplasty, which involves repairing the perforation with thin human posterior lamellar, and transplanting a second APCS lamellar graft, seems to be effective in the treatment of corneal perforations. This technique solves the problem of shortage in supplying corneas and can be used in an emergency.

EP-COR-243

Comparative outcomes of standard and accelerated (9 Mw/Cm²) corneal collagen crosslinking for progressive keratoconus*Ucakhan-Gunduz O., Yeşiltaş Y.S.**Ankara University Faculty of Medicine, Ophthalmology, Ankara, Turkey*

Purpose: To compare the safety and efficacy of conventional and accelerated corneal collagen crosslinking (CXL) in progressive keratoconus.

Method: Thirty four patients (34 eyes) with the diagnosis of progressive keratoconus were enrolled into this prospective, randomized study. Fifteen patients (15 eyes) received standard corneal CXL (3 mW/cm², 30 min) and 19 patients (19 eyes) received accelerated corneal CXL (9 mW/cm², 10 min). Uncorrected distance visual acuity (UDVA), best spectacle corrected distance visual acuity (CDVA), manifest refraction, corneal topography, confocal microscopy and slit lamp biomicroscopy findings were evaluated at baseline and at all postoperative follow-up examinations. One-month postoperatively corneal stromal demarcation line depth was measured in all patients using anterior segment optical coherence tomography (AS OCT).

Results: The mean age of patients was 24.3±4.5 years (19-34 years) and 24.3±4.6 (18-34 years) in standard and accelerated corneal CXL, respectively. The mean follow-up was 18.3±0.7 months (18-21 months) in standard corneal CXL and 18.2±0.6 months

(18-21 months) in accelerated corneal CXL. With both procedure, there were significant improvement in UDVA and CDVA at the last follow-up examination (p<0.05). However, the mean flattening in Kmax was significantly more following standard corneal CXL (p=0.05) as compared to accelerated corneal CXL (p=0.1). The corneal stromal demarcation line depth was significantly shallower following accelerated corneal CXL compared to standard corneal CXL (p<0.05). No progression or sight threatening complication was seen in any patient eye.

Conclusion: Refractive, visual, keratometric, morphological results of the standard and accelerated corneal CXL for the treatment of keratoconus seem to be similar. However, the corneal stromal demarcation line depth was significantly shallower following accelerated CXL compared to standard CXL.

EP-COR-244

Effectiveness of platelet-rich plasma for chronic cornea erosions, associated with herpes simplex virus and cytomegalovirus keratitis*Loshkareva A., Maychuk D.**Svyatoslav Fyodorov State Institution Eye Microsurgery Complex, Therapeutic Ophthalmology Department, Moscow, Russian Federation*

Purpose: To evaluate effectiveness for herpetic corneal erosions treatment after 3 courses instillations of platelet-rich plasma (PRP).

Method: 21 patients with chronic corneal erosions were used in this study. All patients had in anamnesis of one-side Herpetic keratitis. Etiology was confirmed by immunosorbent immunoglobulins M, G assay for Herpes Simplex Virus, Cytomegalovirus. All patients, included in the study, had previous unsuccessful courses of reparative therapy (Dexpanthenol 5% and Sulfated glycosaminoglicans 0,01%, instillations 4 times per day).

First step of treatment included local and systemic antiviral therapy (Gancyclovir eye gel 0,15% and Valcyclovir pills 500mg. by standard scheme). After the therapy, common volume 15ml. of vein blood mixed with Sodium citrate and Dextrosa anticoagulant, subjected to double centrifugation

for 4 min. at 3500 rpm, was used. Patients were receiving PRP subconjunctival injections ones a week and instillations 6 times a day. Additional therapy included Dexamphenol 5%. Treatment dynamics was assessed by Efron scale (cornea fluorescein coloring at 5 sectors). For control was used the patients condition before PRP therapy.

Results: The average index of the corneal lesion before treatment was 9.7 points. After the 1st and 2nd procedure average lesion index was 8.2 and 5.9 points respectively.

After 3 weeks, complete epithelization was observed in 6 patients. 3 patients showed a gradual disappearance of the epithelial defects after 5-6 procedures. 2 patients did not show any response.

Conclusion: Comparative analysis with standard methods of therapy featured positive dynamic of PRP treatment.

EP-COR-245

Disciform keratitis: rickettsiosis can be also the etiology

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Purpose: To report 2 rare cases of disciform like keratitis caused by *Rickettsia conorii*

Method: Case reports.

Results: Two patients with a similar history : 2-months symptoms of blurred vision and red eye. Ophthalmic examination revealed a wide interstitial disciform keratitis. Black spot with small papillary lesion was detected in the superior eyelid skin in patient one and the canthal region in the other. Serologic examination detected high level of IgG to *rickettsia conorii*. The patients were treated with cycloplegics, local and local and systemic tetracyclin. Improvement was rapidly noted.

Conclusion: Rickettsiosis should be considered in the etiology of stromal keratitis. Serodiagnostic tests should be performed in patients from an endemic area.

EP-COR-246

Secondary intraocular lens implantation and anterior segment re-construction prior to DSAEK for aphakic bullous keratopathy in two cases

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Purpose: Cataract surgery on eyes with post-traumatic cataract or weak ciliary zonule sometimes involve cataract extraction due to damage to the iris that further leads to corneal endothelial trauma. We are reporting two cases of aphakic bullous keratopathy that were treated by intraocular lens (IOL) implantation and anterior segment re-construction (ASR) prior to Descemet's stripping automated endothelial keratoplasty (DSAEK).

Methods: The first case was an 84-year old male who developed bullous keratopathy after cataract extraction due to traumatic iridodialysis in the left eye. Irreversible mydriasis and iris coloboma were observed. The second case was a 75-year old female with acute angle-closure glaucoma that developed into bullous keratopathy. The affected eye became aphakia due to ruptured ciliary zonule during the cataract surgery. Iris atrophy was observed. Two-stage or simultaneous IOL stitching to the ciliary sulcus and ASR prior to DSAEK was performed at Saitama Medical University Hospital Eye Center between April and September 2016.

Results: By performing IOL implantation and ASR prior to DSAEK, we were able to eliminate the risk of dropping the graft through the iris coloboma into the vitreous chamber during the procedure. Anterior chamber pressure increased easily while the air was inserted into the chamber because of the already-formed partition between the anterior and posterior chambers, and the graft easily adhered to the host cornea.

Conclusions: Endothelial keratoplasty can be performed safely in patients with aphakic bullous keratopathy by reconstructing a partition between the anterior and posterior chambers by iris-IOL implantation as pretreatment.

EP-COR-247

Myring implantation effect on corneal asphericity in moderate and severe keratoconus

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Purpose: To evaluate of myring implantation effect on corneal asphericity in moderate and severe keratoconus.

Method: This cross-sectional study comprised 32 keratoconic eyes of 28 patients with a mean age of 26/75. Preoperative and postoperative uncorrected distance visual acuity (UDVA), corrected distance visual acuity (CDVA), manifest refraction, corneal asphericity at 6,7,8,9 and 10 mm optical zone in superior, inferior, nasal, temporal and central areas, thinnest location value and keratometry readings were the main outcome measure of the study.

Results: A significant improvement in UDVA and CDVA was observed 6 months after surgery ($P < 0.001$), which was consistent with the significant reduction in sphere ($4/67D$) and cylinder ($2/19D$).

In addition, a significant reduction in the main corneal asphericity at 6,7,8,9 and 10 mm optical zone in superior, inferior, nasal, temporal and central areas was found ($p < 0/001$). The mean thinnest location value decreased from $437/15 \pm 30/69$ to $422/81 \pm 36/91$.

Furthermore, a significant corneal flattening was found, the k_1 , k_2 , and k_m changes was 5/32 D, 7 D, 6/17 D respectively ($p < 0/001$).

Conclusion: MyoRing implantation in keratoconus allows successful corneal modeling and provides significant improvement in visual acuity and refractive error.

EP-COR-248

Refractive outcomes after intracorneal ring implantation

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Purpose: The investigation of refractive error and visual acuity before and 6 months after myringimplantation in patients with keratoconus at Farabi hospital in Tehran, Iran.

Method: In this retrospective study, thirty-four eyes of twenty-eight keratoconic patients files with mean age of 29 ± 7.41 underwent myring operation and they were reevaluated after 6 months. In these patients best corrected visual acuity (BCVA), refractive outcomes and Pentacam[Oculus GmbH] findings were assessed. All patients had clear central corneas, contact lens intolerance, and a central corneal thickness of more than 360 mm.

Results: Six months postoperatively, the mean BCVA (in LogMAR value) improved significantly from 0.30 ± 0.22 to 0.20 ± 0.20 ($p=0.006$) and the mean spherical refractive error improved from -4.66 diopters(D) ± 3.76 to $-1.48D \pm 3.72$ ($p < 0.001$). The mean cylindrical refractive error decreased significantly from $-4.27D \pm 3.15$ to $-2.18D \pm 1.63$ ($P < 0.001$). In cylindrical refraction, the frequency percent of with the rule, oblique and against the rule axes of astigmatism before operation were 21%, 44% and 35%, respectively and after operation have been 18%, 24% and 58%, respectively.

Conclusion: Myring operation provided significant improvement in BCVA, spherical and cylindrical refractive error.

EP-COR-249

Structural and biomechanical corneal differences between non-diabetic and type 2 diabetic patients

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Purpose: To analyze and compare corneal structural and biomechanical properties, characterized by corneal hysteresis (CH) and resistance factor (CRF), between patients with and without type 2 diabetes mellitus (DM), and evaluate their relationship with DM duration, glycated hemoglobin (HbA1c) levels and diabetic retinopathy (DR) stage.

Methods: Sixty diabetic and 48 age and sex-matched non-DM patients were enrolled in this cross-sectional study. DM group were analyzed according DM duration ($<$ or ≥ 10 years), HbA1c levels

($<$ or $\geq 7\%$) and presence of retinopathy. CH and CRF were evaluated using ocular response analyzer (ORA). Axial length (AL), mean keratometry (Km), central corneal thickness (CCT), and intraocular pressure with ORA (IOPcc) and Goldmann applanation tonometry (IOP-GAT) were measured. Uni and multivariate linear regression analysis were performed to evaluate the relationship between demographical/clinical (age, gender, body mass index [BMI], DM duration, HbA1c levels, smoke history) and ocular variables (AL, Km, CCT, IOPcc, IOP-GAT) with biomechanical parameters.

Results: CH and CRF were greater in DM group when compared to non-DM group, however the differences did not reach statistical significance ($p=0.637$ and $p=0.439$, respectively). There was no statistical difference between groups for AL, Km, CCT, IOPcc or IOP-GAT. In a multiple regression analysis, CH was positively associated with CCT ($p < 0.001$) and negatively associated with IOPcc ($p < 0.001$). CRF was positively associated with CCT ($p < 0.001$) and IOPcc ($p=0.014$).

Conclusion: This study suggest DM might affect corneal biomechanics; however, CCT and IOPcc were found to be the main parameters that affect corneal biomechanical properties.

EP-COR-250

Comparison of corneal thickness and corneal endothelial cell density between diabetics and non-diabetics

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Purpose: Previous studies have reported that cornea is thicker in diabetics than in non-diabetics. In this study we compared corneal thickness and corneal endothelial cell density between diabetics and non-diabetics. We also examined which corneal layer was thicker in diabetics.

Method: Data were collected between January and June 2016 from 75 eyes in 51 diabetics (38 eyes in 28 males, 37 eyes in 23 females, 70 ± 8.4 years old, DM group) and 200 eyes in 140 non-diabetics (72 eyes in 48 males, 128 eyes in 92 females, 75 ± 8.6 years old, non-DM group) that received cataract surgery. Anterior segment OCT (CASIA2, TOMEY) was used to measure central corneal thickness (CCT), corneal epithelial thickness (CET), and corneal stromal thickness (CST), and specular microscopy (MB-3000, TOMEY) was used to measure corneal endothelial cell density, respectively. We also examined whether CCT thickness was correlated with BMI and HbA1c.

Results: CCT was $549.9 \pm 27.9 \mu\text{m}$ in DM group and $525.7 \pm 31.2 \mu\text{m}$ in non-DM group, and was significantly thicker in DM group ($p < 0.001$). CET was $49.3 \pm 3.7 \mu\text{m}$ in DM group and $49.5 \pm 3.7 \mu\text{m}$ in non-DM group, respectively.

The difference was not statistically significant ($p=0.477$). CST was $500.5 \pm 27.6 \mu\text{m}$ in DM group and $476.2 \pm 31.1 \mu\text{m}$ in non-DM group, and was significantly thicker in DM group ($p < 0.001$).

The corneal endothelial cell density was 2644.9 ± 242.9 cells/ mm^2 in DM group and 2526.8 ± 337.3 cells/ mm^2 in non-DM groups, respectively. Corneal endothelial cell density was higher in DM group than in non-DM group ($p=0.005$). However, there is no correlation between CCT and corneal endothelial cell density. CCT in DM group was neither correlated with HbA1c ($p=0.584$) nor BMI ($p=0.812$).

Conclusion: Diabetic appeared to have thicker corneal stroma than non-diabetics.

EP-COR-251

The results of femtosecond laser-assisted keratoplasty

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Purpose: To evaluate the results of femtosecond laser-assisted keratoplasty. A comparative study included 245 consecutive patients (250 eyes) (152 men, 93 women, mean age 35.9 ± 11.3 years). The follow-up period varied from 5 month to 4 years. A detailed ophthalmological examination, including OCT, endothelial cell count, corneal topography, pachymetry was performed.

1 group consisted of 110 eyes underwent femtosecond laser-assisted keratoplasty (FDALK 20, FPKP 90 eyes).

2 group included 140 eyes underwent manual keratoplasty (DALK 14, MPKP 126 eyes). Femtosecond laser mushroom shape of same-size donor grafts was used in 48 eyes, straight-edge shape was performed in 62 eyes, smaller donor grafts were used in 12 eyes.

Results: BCVA of patients with no ocular comorbidity ranged from 20/20 to 20/60. At 3 months after the surgery there was no significant difference between mean BCVA between the two groups. Mean cylindrical refractive error (suture on) was $3.56 \pm 3.6D$ in 1 group, $4.11 \pm 4.98D$ (from 0.50 to 12.00D) in 2 group. Corneal topography, UCVA improved after suture removal in 16.4%

in 1 group, in 10.7% in 2 group. Endothelial cells density (ECD) after PKP was 1914.33 ± 207.39 c/mm in 1st and 1870 ± 387.46 c/mm in 2nd group. There were no differences in ECD in eyes after DALK, mean ECD was 2189 ± 246 c/mm. Suture removal performed 12-19 months in 1st and 10-15 months in 2nd group. Delayed epithelial healing and increased IOP which resolved with topical anti-glaucoma drops were observed in 6 eyes. Stromal rejection was diagnosed in 2 case after FPKP and in 3 cases after MPKP.

Conclusions: Femtosecond laser-assisted keratoplasty provided a better visual rehabilitation due to precise graft-host alignment, less surgical trauma. The need of suture fixation of donor corneal transplant leaves the problem of post-op astigmatism. The optimal terms of suture removal after FPKP should be determined individually. Higher ECD observed in 1st group.

EP-COR-252

Relationship between diabetic retinopathy and in vivo corneal microscopy findings

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Purpose: The purpose of this study was to evaluate the morphological changes of corneal nerve fibers in patients with DM and to establish the correlation between corneal neuropathy and diabetic retinopathy (DR).

Method: 30 patients with DM type 2 were scanned using IVCN. Patients with diabetes were classified into three groups: patients without DR (n=11), patients with non-proliferant DR (n=14) and patients with proliferative DR (n=5). Heidelberg HRT III IVCN was used to get the images of subbasal nerve plexus and to quantify corneal nerve fiber density (CNFD), corneal nerve branch density (CNBD) and corneal nerve fiber length (CNFL).

Results: The duration of DM was significantly lower in the group without DR in comparison to the group with non-proliferant and proliferant DR, meanwhile there was no significant difference between non-proliferant and proliferant DR groups. A significant reduction of CNFD, CNBD, CNFL was presented in patients without diabetic retinopathy. A progressive decrease of CNFD, CNBD and CNFL correlated with increasing severity of diabetic retinopathy.

Conclusion: Corneal nerve abnormalities occur before the development of diabetic retinopathy. The correlation between corneal neuropathy and diabetic retinopathy in this study was not established. Further clinical studies are required to define the relationship between diabetic retinopathy and corneal neuropathy.

EP-COR-253

Cross linked donor corneas in Boston Type 1 Keratoprosthesis resist infections and melts- A case series

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Purpose: To demonstrate the efficacy of cross linking of donor corneas in resisting post operative infections and corneal melts in Boston Type 1 Keratoprosthesis in eyes with ocular surface disorders

Method: A conventional epithelium off corneal collagen cross linking was performed with riboflavin and uv light, in a de-epithelialized donor cornea mounted on an artificial anterior chamber, subsequently the cornea is used as a carrier for Boston Type 1 keratoprosthesis, and transplanted in eyes with OSD and multiple failed corneal grafts. The patients are followed up for corneal

integrity to resist infection and corneal melts, which are common following Boston Keratoprosthesis and especially in cases of OSD

Results: 3 cases studied, followup of 1 year. All 3 grafted eyes were healthy in resisting long term post operative infections and corneal melts

Conclusion: Cross linking of donor corneal button before Boston Type 1 Keratoprosthesis with Riboflavin and uv rays is effective in improving long term post operative strength and outcome of corneas, especially in cases of ocular surface disorders

EP-COR-254

DMEK in a phakic patient with posterior polymorphous corneal dystrophy and secondary glaucoma

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Purpose: To report a case of successful Descemet membrane endothelial keratoplasty (DMEK) in a phakic patient with posterior polymorphous corneal dystrophy type 1 (PPCD1) and a history of penetrating keratoplasty (PK) who presented with uncontrolled secondary glaucoma and corneal graft decompensation.

Method: Case report

Results: 42-year old male presented to our tertiary care hospital with blurred vision in the left eye. The patient underwent PK in the right eye at the age of 28 years and in the left eye at the age of 29 years due to corneal edema secondary due to PPCD1. Visual acuity in the left eye declined from 0,63 to counting fingers. Slit-lamp examination revealed decompensated corneal graft with stromal and epithelial edema. The patient was also diagnosed with secondary glaucoma in the left eye one year ago which was treated by topical medications. Due to endothelial failure DMEK was indicated. However, on a day before the scheduled surgery uncontrolled intraocular pressure (IOP) was noted with measurements up to 30 mmHg and glaucoma surgery using Ex-press P200 Glaucoma filtration Device (Alcon) combined with subconjunctival Ologen implant (Aeon Astron Europe B.V.) was performed instead. Immediately after the surgery IOP dropped to values around 17 mmHg without any treatment. Uneventful DMEK was performed 3 months later leading to fast improvement of patient's best corrected visual acuity (BCVA). At the last follow-up visit, 8 months after the DMEK procedure, the left corneal graft remained clear with BCVA of 0.5. IOP was controlled without any medication.

Conclusions: Surgical glaucoma management prior to corneal grafting needs to be considered in every patient with uncontrolled glaucoma as the risk of corneal graft failure increases significantly when IOP is not stable. A combination of a drainage device and an antifibrotic agent followed by DMEK enabled in our patient with PPCD1 restoration of vision.

EP-COR-255

Activity indicators of intracellular enzymes of the corneal epithelium in the tear fluid during extended wear soft contact lenses in patients with mild myopia

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Purpose: To study the influence of soft contact lenses on the biochemical parameters of tear fluid in patients with mild myopia.

Method: Studies have been conducted in 43 (84 eyes) patients with mild myopia, the main group (MG) - 23 patients (44 eyes) who use soft contact lenses for more than 1 year, the comparison group - 20 patients (40 eyes), with the spectacle correction.

All investigated was held determination in the tear fluid of activity of lactate dehydrogenase (LDG), glucose-6-phosphate dehydrogenase and acid phosphatase using optical test.

Results: LDG activity in the MG was increased to $(5,7 \pm 0,4)$ nmol / ml min, which was 135.7% compared with the normal $(4,2 \pm 0,3)$ nmol / ml min. Indicators of activity of glucose-6-phosphate dehydrogenase in patients MG were increased to $(11,9 \pm 0,8)$ nmol / ml min, accounting for 124% compared with the norm $(9,6 \pm 0,7)$ nmol / ml min. In patients of MG acid phosphatase activity in the tear fluid was increased to $(16,9 \pm 1,0)$ nkat / mL, which was 122.4% compared with the norm $(13,8 \pm 0,9)$ nkat / ml. There where identified significant increase in the activity of lactate dehydrogenase and glucose-6-phosphate dehydrogenase by more than 35% and 24% respectively in patients of MG.

This situation show the degradation rate of the corneal epithelium, because these enzymes are localized in the cytoplasm of epithelial cells. It was also found a significant increase in activity of the lysosomal marker enzyme (acid phosphatase) in tear patients of MG.

Conclusion: Our investigation showed that contact lenses extended wearing increases the lability of the membrane structures of the cornea epithelium cells.

EP-COR-256

Bilateral marginal keratitis following influenza virus vaccine administration

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Purpose: To report a case of marginal keratitis that developed days following administration of the influenza vaccine.

Method: Retrospective chart review of a 42-year-old female patient who developed bilateral marginal keratitis days after receiving an intranasal live-attenuated influenza virus vaccine. Patient underwent a comprehensive eye examination.

Results: Two days after the administration of the intranasal live-attenuated influenza virus vaccine, the patient presented with pain, redness, tearing, and discomfort in both eyes. Examination of the eyelids was unremarkable in both eyes. Anterior segment examination of the both eyes showed conjunctival hyperemia, and several corneal sub-epithelial peripheral infiltrates separated

from the limbus by a clear zone. Anterior chamber and posterior segments were unremarkable in both eyes. The condition resolved with topical antibiotics and corticosteroids.

Conclusion: Ocular complications of vaccines are rare. Intranasal live-attenuated influenza virus vaccine may trigger a hypersensitivity reaction, which manifests in the form of marginal keratitis. To the best of our knowledge, this is the first report of such complication after the administration of an influenza virus vaccine.

EP-COR-257

The choice between phototherapeutic keratectomy or topical medications in cases of acanthamoeba keratitis
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Purpose: to develop an algorithm of diagnostic and treatment care in cases of acanthamoeba keratitis in early stages of the disease

Method: 27 patients with non specific superficial keratitis (27 eyes) were suspected to have acanthamoeba etiology of the disease. For diagnostic reasons scraping of the cornea and confocal microscopy were performed in all cases. All patients received traditional topical treatment with polyhexamethylene biguanide. After the recurrence of the disease, 21 patient underwent excimer laser phototherapeutic keratectomy (PTK), 6 patients received keratoplasty. The topical treatment with chlorhexidine and polyhexamethylene biguanide was again administered. Special care was taken to delay the full epithelization of the cornea up to 3 days. Immediately after the recurrence of the clinical symptoms in 1 case after PTK the penetrative keratoplasty was performed.

Results: Acanthamoeba was cultured in 16 cases. PCR analysis proved acanthamoeba etiology in 22 cases. By confocal microscopy acanthamoeba was found in 25 corneas. After topical treatment full epithelization were achieved in all cases, but in 1 month period recurrence of keratitis developed. Treatment with PTK was considered successful in 20 cases. Penetrative keratoplasty was effective in 7 cases. Follow up period from 1 to 3 years did not show any signs of corneal abnormalities. 5 stages of acanthamoeba eye infection disorder were evaluated:

- I Superficial epithelial keratitis
- II Superficial infiltrative punctual keratitis
- III Stromal ring infiltrates
- IV Ulcerative keratitis
- V Keratoscleritis

Conclusion: Topical treatment with antimicrobial agents is questionably successful due to their low abilities of corneal penetration, but PTK is proven to be effective in early (I, II) stages of acanthamoeba keratitis. The excimer laser ablation not only mechanically erases microorganisms, but opens a pass way for drugs to reach the cysts and trophozoites in non ablated area.

EP-COR-258

Limbal stem cell transplantation for restoration of the ocular surface health in bilateral limbal stem cell deficiency*Asena L., Dursun Altınörs D.**Baskent University Faculty of Medicine, Ophthalmology, Ankara, Turkey*

Purpose: The aim of this study was to report the results of limbal stem cell transplantation in patients with bilateral limbal stem cell deficiency (LSCD).

Method: Four patients (2M/2FM) with bilateral limbal stem cell deficiency were treated in Baskent University Faculty of Medicine, Department of Ophthalmology between 2013 and 2015. Living-related conjunctival allograft (Ir-CAL) transplantation was performed in 3 cases and cadaveric keratolimbal allograft (KLAL) transplantation was performed in 1 case.

Results: The mean age of the patients was 33.8±13.8 years (range; 14-46 years). The etiology of bilateral LSCD was different for each patient including Sjögrens' Syndrome, Steven Johnsons Syndrome, chemical injury (alkali burn) and congenital aniridia.

The mean duration of preoperative follow-up was 13.3±8.1 months (range; 4-23 months) and treatment modalities used during this period were topical corticosteroids, topical cyclosporin A, ologous serum eye drops, vitamin A ointment, topical anti-VEGF agents and frequent use of non-preserved artificial tears. Punctal plugs were used in 2 cases.

Visual acuity increased in all patients except in one case who developed fungal keratitis 2 months after KLAL transplantation. All patients were given systemic 1-1.5 mg/kg Cyclosporin A postoperatively for prevention of a rejection reaction. The mean postoperative follow up duration was 25.8±16.6 months (range; 5-42 months).

Corneal transplantation was performed simultaneously in one patient and, 1 and 2 years after LSCT in two other patients.

Conclusion: Treatment and restoration of the ocular surface health is challenging in bilateral LSCD. Living-related conjunctival allograft transplantation and cadaveric keratolimbal allograft transplantation are currently available surgical techniques in this group of patients. In the future, more refined treatment options such as transplantation of cultivated limbal epithelial cells might be available.

EP-COR-259

Where was the air bubble? A proof of Dua's layer*Magalhaes Oliveira A.¹, Bernal Montesdeoca L.², Perez J.²**¹Complejo Hospitalario Universitario Insular Materno Infantil, Ophthalmology Departmet, Las Palmas de Gran Canaria, Spain,**²Complejo Hospitalario Universitario Insular Materno Infantil, Las Palmas de Gran Canaria, Spain*

Purpose: Study of the case of a patient with an air bubble after DALK surgery, a case report.

Methods: Male patient 35 years old with known diagnostic of Keratoconus and worsening of visual acuity despite intrastromal corneal rings.

We proceeded doing a corneal transplant using Deep Anterior Lamellar keratoplasty technique (DALK). No perforation of Descemet's membrane/endothelium neither other intraoperative complications taken place. Fresh corneal scleral button with normal transparency and without any known eye diseases was obtained from a human donor.

Results: After surgery, the patient presented an air bubble in the superior-temporal side of the cornea, not mobile and well-defined appearance. The air bubble reabsorbed itself in the 3rd day time period without complications.

Conclusions: If the air bubble was not mobile (which would may have pointed that it was in the Anterior Chamber) and did not have the frosty appearance of the big bubble (BB) technique (suggestive of air contact with corneal stroma), where was the air bubble? We can only conclude that it was between the Dua's layer and the Descemet's membrane.

EP-COR-260

Ocular surface effects in tetra hidro cannabioid (marihuana) addicts*Cumurcu T.¹, Mutlu K.¹, Cumurcu H.B.²**¹Inonu University, Ophthalmology, Malatya, Turkey, ²Inonu University, Psychiatry, Malatya, Turkey*

Purpose: To evaluate the tear film function and ocular surface changes in Tetrahydrocannabinoid (THC) addicts.

Method: This prospective case-control study involved right eye of 51 male subjects with heavy alcohol consumption (group 1) and 51 age- and sex-matched control subjects (group 2). Best-corrected visual acuity measurement, slit-lamp examination, Schirmer test, tear film breakup time (BUT) measurement, and conjunctival impression cytology were performed in all subjects. The results were compared between the 2 groups. The satatistical analysis made by using SPSS v.16.0 (Statistical Package for Social Science) packet program. Mann-Whitney U and Willcoxon W and Z tests are used for data analysis. When datas didn't coherent according to Kolmogorow Simirnow test statics normal variance (p<0.05), Mann-Whitney U test statistics is used for compare non parametric two groups. P< 0.05 value is statistical significant.

Results: The mean Schirmer test results in group 1 and group 2 were 9,7±3.9 and 8,4±4 mm, respectively, and the mean BUT values were 10±4 and 9,3±4 seconds, respectively. The mean impression cytology scores in group 1 and group 2 were 1,5±1 and 1,25±1, respectively. There isn't statistically significant difference between sutdy and control groups for The mean Schirmer results (p=0,9), BUT (p=0,34) and grading of cytological changes (p=0,25).

Conclusion: Our data showed that THC addicts have similar tear production, tear film stability, and the ocular surface epithelium with normal subjects.

EP-COR-261

The effectiveness of intrastromal implantation of donor corneal segments in patients with progressive keratoconus*Kuderko I.**'Medical Center MTZ', Minsk, Belarus*

Purpose: To evaluate the effectiveness of intrastromal implantation of donor corneal segments in paralimbal zone of the cornea in patients with progressive keratoconus.

Method: The main group consisted of 21 eyes of patients with progressive keratoconus in which the cornea were implanted intrastromal of 2 donor corneal segments paralimbal to a depth of 300mkm on 11 and 13 hours. Corneal segments were formed from a donor cornea in paralimbal zone , their size was 4.5 mm x 1.0 mm x 0.3mm. The control group was 21 not operated eyes. The observation period was 2 years. The method consists in the biological effect of donor corneal segments on paralimbal zone (zone stem cells) of the cornea of the operated patients and this improve metabolic processes.

Results: In the main group UCVA improved from 0.148 to 0.24. BCVA increased from 0.39 to 0.57. Corneal topography had changed : the average cylinder decreased from 6.4 D to 5.5 D, and decreased curvature of the steepest

area from 58,5 D to 57.5 D. Central corneal thickness remained stable and was in before surgery 434 μm and after 438 μm . In the main group total number of endothelial cells increased from 2494 to 2634, as well as increased the percentage of hexagonal endothelial cells from 41.5% to 44.9%, which is said to improve the state of the endothelium. All changes in the main group were statistically significant ($P < 0.05$). In the control group, statistically significant changes were not revealed.

Conclusion: Intrastromal implantation of donor corneal segments in paralimbal zone of the cornea is an effective method for stabilisation of progressive keratoconus.

EP-COR-262

The TRPV 1 receptors are the target for drug therapy of ophthalmic diseases

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Purpose: The superfamily of ionic receptors channels Transient Receptor Potential Channels (TRP) was allocated. The TRPV subfamily including of 6 members (TRPV 1-6). The TRPV channels play an important role in regulation of eye homeostasis and pathogenesis of various eye diseases, in particular development of pathology of the cornea and the retina (Wienderhoet M. et al, 2000; Zhang F et.al, 2007). The purpose of the work is studying the possibility of suppression of activity of TRPV1 channels that can promote braking of pathological processes in the cornea and the retina.

Method: Action of dry extract of laminaria was studied on the stable line of cells of CHO, which express receptor of the rat TRPV1 (rTRPV1). This line was received with use of T-REx System (Invitrogen). kDNA, coding rTRPV1 was cloned in an induced expressed vector of pcDNA4/TO. The expression of TRPV1 was induced by addition of tetracycline on cellular environment (1 mg/ml) in 24 hours prior to testing. The selected monoclonal cells with the greatest level of an expression of TRPV1 were used in experiment.

The fluorescent analysis was carried out with use of the tablet spectrophotometer with the integrated automatic system of dispensing of liquids NOVOSTAR (BMG LABTECH). Change of cellular fluorescence ($\lambda_{\text{exc}}=485 \text{ nm}$, $\lambda_{\text{em}}=520 \text{ nm}$) before and after stimulation of cells agonist TRPV1 - capsaicin (400 nM) in the presence of various concentration of dry extract of laminaria was investigated. Measurements were carried out at pH 7.4 and 37 °C.

Results: In experiment it was established that an application of laminaria in concentration of 4-5 mg/ml on cells with an expressed receptor of TRPV1 cause considerable falling (30-50%) Ca^{2+} answer of cells at single activation of cells with the capsaicin.

Conclusion: Further studying of drugs, basis of laminaria, inhibiting activity of TRPV1 receptors, can be one of ways of treatment of eye diseases.

EP-COR-263

Severe corneal complications caused by wearing of contact lenses

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The most severe complications as a result of wearing contact lenses (CL) are infectious keratitis.

Purpose: The aim of investigation is analysis of severe corneal inflammatory processes due to wearing contact lenses.

Method: There were 60 people (64 eyes) under our observation from 2012 till 2016 year. 59 patients used a soft hydrogel ($n = 22$) or silicone - hydrogel ($n=37$) lenses, mainly with planned replacement at 1, 3, 6 months, a flexible or prolonged wearing regime. 1 patient used orthokeratology lenses. Clinical forms of corneal lesions were the following: deep stromal keratitis - 16 eyes; corneal ulcer - 34 cases, including 6 eyes with perforation, 14 eyes - with melting; abscess of the cornea - 4 eyes, anterior endophthalmitis - 10 eyes. Etiology identified: in 26 cases bacterial flora, including 11 cases of *Pseudomonas aeruginosa*, 2 - *Acanthamoeba*; fungi - 12; herpetic infection - 1; mixed flora was found in 25 cases, of which 21 - fungal+bacterial, 2-viral+bacterial, 2-fungal+viral.

Results: As a result of the treatment in 63 cases (98.5%) infectious inflammatory process was stopped. In one eye (1.5%) carried out evisceration. Conservative treatment was effective in 37 eyes. In 27 cases (42.1%) therapeutic keratoplasty was performed. As a result of conservative therapy in 13 cases maximum correction visual acuity increased to 0.85 - 1.0. In most cases, as a result of treatment keratoplasty the eye was saved as an organ with possibility of surgery with an optical purpose.

Conclusion: Corneal complications as a result of wearing soft contact lenses are very severe. Users of CL should be regularly under medical observation. In the case of complication the patients have to be in the early under observation of ophthalmologist. After diagnostic of infectious complications patients have to be sent immediately to special corneal clinic.

EP-COR-264

Aniridia-related keratopathy in transplanted corneas from healthy donors

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Purpose: To study the histopathological and cell signalling changes of transplanted healthy donor corneas in patients with aniridia-related keratopathy

Methods: Three patients with advanced keratopathy that were retransplanted with a centered or decentered technique were included in this study. A control group with corneas from healthy controls was also analyzed. The samples were studied with immunohistochemistry with antibodies against markers for cell differentiation and proliferation, such as Notch1 and its inhibitors Dkk1 and Numb. Fibrosis and wound-healing markers as well as collagen I and IV, tenascin-C, $\alpha 1$ integrin chain, laminin $\alpha 3$ chain and fibronectin were also studied.

Results: Corneal epithelium and basement membrane were irregular with an increase disparity in cell size and distribution when compared with the control group. A periodic interruption in the basement membrane was also described. The stromal structure was also disturbed with the conjugation of inflammation

markers and lack of collagen I. Increased levels of Dlk1 (notch inhibitor) were detected when compared with the control group. No significant differences were encountered between the decentred and centred transplants.

Conclusions: ARK is associated with severe stromal changes in the transplanted healthy donor corneas and several underlying cell signalling pathways.

EP-COR-265

Evaluation of oxidative stress in patients with keratoconus

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Purpose: To evaluate the specific activity of some serum enzymatic antioxidant defences (superoxide dismutase- SOD and glutathione peroxidase- GPX) and of serum malondialdehyde- MDA, the main product of lipid peroxidation, in patients with keratoconus, as compared with a group of age-matched healthy subjects, in order to find evidence regarding the correlation between corneal degeneration and oxidative stress.

Method: The subjects (n = 50) consisted of 25 patients (18 males and 7 females; age 27.1 ± 1.45 years) with keratoconus, recruited from the Oftaprop Clinic of Iasi, Romania, and 25 healthy control age- and gender-matched subjects (16 males and 9 females; age 29.3 ± 1.09 years).

Superoxide dismutase (SOD) activity was measured by the percentage reaction inhibition rate of enzyme with WST-1 substrate (a water soluble tetrazolium dye) and xanthine oxidase using a SOD Assay Kit (FLUKA, 19160) according to the manufacturer's instructions. The activity of glutathione peroxidase (GPX) was measured using the GPX cellular activity assay kit CGP-1 (SIGMA). Lipid peroxidation was evaluated through the TBARS assay method.

Results: We observed a very significant decrease ($F(1,38) = 53, p < 0.0001$) of SOD and GPX activity in the serum of patients with keratoconus, as compared to the age and sex-matched control group suggesting an increase in the oxidative stress status.

Serum MDA levels found in KC patients were 21.69 ± 10.75 nmol/mL, and in controls were 15.41 ± 3.06 nmol/mL. Thus, it seems that MDA levels show a significant increase, as compared with controls ($p < 0.05$).

Conclusion: Our results provide additional evidences that oxidative stress damage occurs in patients with keratoconus.

This was mainly demonstrated by observing a very significant decreased activity of the main antioxidant enzymes: superoxide dismutase and glutathione peroxidase and decreased in serum MDA levels in KC patients as compared to healthy controls.

EP-COR-266

Amniotic membrane transplantation - perceptual, visual, cosmetic outcomes

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Purpose: To evaluate perceptual, visual and cosmetic outcomes of amniotic membrane transplantation (AMT) and follow the effect in time.

Method: Six hundred and fifty seven subjects (723 eyes) were followed over period of five years. Most of the eyes had 1 AMT (528 eyes), 68 eyes had two AMT, and the rest had 3 and more procedures. The mean age was 55.2years ,

with the youngest patient being 1 years old and the oldest 95 years. Etiological diversity included bullose keratopathy (33%), burns and trauma (22%), corneal dystrophies (31%), limbal stem cell insufficiency (12%) and other (2%). All eyes received standard AMT as a cover, performed by the protocol of a single surgeon.

The quality of eye comfort (perceptual, visual and cosmetic) was evaluated on the basis of specially developed scales.

Results: The subjects were with slightly female predominance (61%). The most significant perceptual improvement was related to pain which improved mean of 3 fold in 1 week, and kept improving till 4-th week. The other perceptual signs (tearing and discomfort) improved with lower speed.

Visual acuity improved in direct correlation with the etiology and the best results were achieved in patients with epithelial erosions and defects.

Cosmetic comfort improved in 65% of cases but usually not earlier then 4 weeks. No worsening of the symptoms was reported by any subject.

Conclusion: This study highlights the importance of AMT not only for structural restauration but also for improving the life quality via achieving better perceptual, visual and cosmetic comfort of patients with anterior surface disease. The procedure is with easy learning curve and would be even simplified in the future and should be considered in wider indications for complete fast restauration of the ocular surface.

EP-COR-267

Cognitive and personality changes in patients with keratoconus?

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Purpose: Lately, there is a growing interest towards understanding the possible personality and cognitive deficits associated with keratoconus. The aim of our study was to clarify if keratoconus patients show cognitive impairment associated with a specific personality profile.

Method: We studied 80 patients with keratoconus using a standardized personality questionnaire16PF (Sixteen Personality Factor Questionnaire) designed to provide key information regarding the structure of personality of subjects investigated. It consists of 187 items that follow 16 personality traits. Questionnaires were interpreted by a clinical psychologist.

Results: We found that 55% of the subjects (44/80) are conservative with respect to conventions, 57% (45/80) are addicted to collective. In terms of anxious-depressive trends, patients are affected in 50% (40/80), yet we can not specify the severity of mental disorder. The hypothesis that patients with keratoconus show a cognitive deterioration, is disproved by the results of this research.

Conclusion: Keratoconus personality is characterized by a low emotional stability, low frustration tolerance, emotional character, impressionable, and dissatisfied. People in this category tend toward pessimism and towards excessive caution. They manifest attachment to the group, preferring work and collective decisions.

EP-COR-268

Use of crosslinking in refractory infectious keratitis: prospective study of 22 cases*Elorch H.¹, Yadari M.², Kouisbahi A.², Baddou T.², Berraho A.²**¹Ophthalmology B, Rabat, Morocco, ²Ophthalmology B, Kenitra, Morocco*

Purpose: PACK-CXL represents a recent alternative in treating infectious keratitis refractory to conventional treatment.

Method: In our prospective study, we describe 22 cases of infectious keratitis refractory to conventional treatments within our service which has benefited from crosslinking in order to reduce healing time and improve visual prognosis. In our series the PACK-CXL was done via transepithelial pathway due to Medio-Cross Riboflavin / Dextran solution 0.25% along with UVA according to intermediate protocol.

Results: For 22 patients (14M/8W), we can notice a photophobia and lacrimation decrease within 48 hours following the CXL session to all cases. One week after CXL associated with ATB treatment, we notice a net ulcer improvement for 18 eyes, a rapid and net reduction of edema and corneal ulcer diameter along with a progressive improvement of visual acuity.

Méthillino aureus resistant staphylococcus is on the top of germs that have been found.

Conclusion: Transepithelial CXL could be a new method in the treatment of infectious keratitis refractory to usual treatments and could be even used as fist intention due to resistant strains frequency.

This strengthening effect is likely the result of the creation of reactive oxygen species leading to the formation of covalent bonds between collagen and proteoglycan molecules. Oxygen is essential for the photochemical polymerization reaction in CXL and is probably the limiting factor of this reaction.

EP-COR-269

Modified type 1 Boston keratoprosthesis surgery for severe cicatrizing keratoconjunctivitis*Utine Yildirim C.A., Maden A.**Dokuz Eylul University, Department of Ophthalmology, Izmir, Turkey*

Purpose: Report of two cases with severe cicatrizing keratoconjunctivitis to whom modified Boston type 1 keratoprosthesis (Kpro) surgery with buccal mucosal / full conjunctival coverage was performed.

Method: One patient with end stage ocular cicatrizing pemphigoid (Case 1, 73 years old) and 1 patient with severe alkali burn (Case 2, 48 years old) were admitted for visual rehabilitation. The visual acuities were bilateral light perception in Case 1; light perception in the only seeing eye in Case 2.

Case 1 had no history of ocular surgery before.

Case 2 had 2 failed penetrating keratoplasties, cataract surgery with intraocular lens (IOL) implantation and Ahmed valved tube implant before.

Both patients were desperate with no other options for corneal transplant. Risks and possible prognoses of the planned surgeries were discussed in detail with both patients.

Results: Case 1 had systemic immunosuppression with mycophenolate mofetil 3 gr/day for 2 years before the surgery. He underwent combined aphakic type 1 Boston Kpro implantation and extracapsular cataract extraction with no IOL implantation followed by fornix to fornix full coverage of the bulbar ocular surface with buccal mucosa.

Case 2 underwent a similar surgery except for dislocated IOL explantation and full coverage of the bulbar ocular surface with advanced tarsal conjunctiva. In both patients, central opening of covered bulbar surface, in front of the Kpro anterior plate optic was performed 3 months after the surgery, after which, the

uncorrected visual acuity reached 0.6 in Case 1 and 0.3 in case 2 in a few days.

Conclusion: Modified Boston type 1 Kpro implantation must be considered as an alternative in severe dry eyes, with better functional and cosmetic results as compared to type 2 Boston Kpro. However, close follow-up is mandatory for long term good prognosis in these patients.

EP-COR-270

Extreme corneal neovascularization*Pontón P.^{1,2}, Díaz Valle D.²**¹Hospital Universitario de Burgos, Burgos, Spain, ²Hospital Clínico San Carlos, Madrid, Spain*

Purpose: To describe a case report of recurrent herpetic keratitis with severe corneal neovascularization and its medical-surgical approach.

Method: 47-year-old woman with wide corneal leukomas and neovascularization on the graft of her third penetrating keratoplasty for recurrent herpetic keratitis. It also had a mature cataract consequence of a previous retinal detachment surgery.

Intrastromal and topical Bevacizumab were used to decrease superficial neovascularization and cauterization of the mature vessels with fine needle was also practised. Oral antiviral treatment added to the anti-inflammatory action of Medroxyprogesterone and acetate of prednisolone as well as oral doxycycline at low doses, combined with intense lubrication with autologous serum and artificial tears achieved optimization of the ocular surface, required for eventual surgery.

We performed a phaco-keratoplasty with IOL implantation and Krumeich ring, as well as amniotic membrane coating, due to extensive limbal insufficiency, corneal hypoesthesia and the previous problems of epithelialization. The evolution was favorable until the eighth month, when she suffered a herpetic recurrence that was controlled with topical treatment and oral enhancement. Vascular congestion secondary to the surface inflammation was stopped by the barrier effect of the Krumeich Ring.

Results: One year after surgery, the patient had an intact corneal epithelium and a non-vascularized graft. Despite mild haze, moderate posterior capsule opacity, hypermetropic refraction and residual epiretinal membrane, our patient's visual acuity was 20/30 spontaneous.

Conclusion: Presurgical topical and intrastromal application of bevacizumab on an optimized ocular surface and the implantation of a Krumeich ring during surgery, favor the surgical success of a penetrating keratoplasty and prevent its eventual vascularization after recurrent herpetic keratitis.

EP-COR-271

Mystery case: mysterious "keratitis" uncovered*Kozdras G., de Faber J.T.H.N.**The Rotterdam Eye Hospital, Ophthalmology, Rotterdam, Netherlands*

A 64-year-old patient, with a medical history of recurring cold sores, a cataract extraction of the left eye in March 2016 and of the right eye in April 2016, was sent in November for a second opinion of a therapy resistant HSV immune stromal keratitis of the left eye.

The patient was treated with antiviral ointment, oral antiviral tablets and prednisolone (Pred Forte) eye drops for a certain amount of time, without any visible improvement and further decrease of visual acuity.

The ophthalmological examination showed inferior a small sector of cornea shagreen, Descemet's membrane folds and minimal macular edema of the left eye (confirmed by an OCT).

Thus it didn't give a real impression of a HSV immune stromal keratitis.

During gonioscopy after looking carefully around the area of the cornea shagreen, a small thin transparent foreign body (2.5 x 1.5mm) was noticed in the anterior chamber.

Before surgically removing the foreign body, an anterior chamber paracentesis was performed to be able to conduct a Goldmann Wittmer coefficient and PCR analysis.

PA-results confirmed that the foreign body was a piece of plastic, most probably caused by a cover sheet used during the cataract surgery.

During the examination a week after the surgery, there was except minimal cornea shagreen, no more signs of macular edema (confirmed by an OCT) and a significant increase of visual acuity of the left eye.

This was a case of a totally unexpected explanation of a "keratitis" that could be missed by any ophthalmologist.

EP-COR-273

A road to a practical, inexpensive and safe implantation of the Boston keratoprosthesis

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Purpose: Presently the Boston Keratoprosthesis (B-KPro) is implanted into a corneal graft by the surgeon in the operating room. The combination is then sutured into the patient's eye. This routine has led to occasional errors and the logistics are cumbersome and expensive. A simplified method is proposed. The B-KPro can be preassembled into a corneal graft and then transferred to a vial to be sterilized with γ -radiation (approved method for corneal grafts). The resulting combination can then be stored and transported. For such a procedure to be acceptable, it has to be shown that γ -radiation will not damage the B-KPro.

Methods: We have evaluated the effect of γ -radiation on the medical PMMA that is used in the manufacturing of the B-KPro. 15mm-diameter discs of PMMA were submitted to either ethylene oxide sterilization (the presently used process for the B-KPro), or different doses of γ -radiation (10, 25 and 50 kGy), independently. Cell biocompatibility, mechanical strength and optical quality of the material were evaluated. Moreover, the feasibility of assembling the B-KPro to an allograft and γ -irradiate afterwards was also evaluated.

Results: There were no differences in cell biocompatibility among the samples, after culturing corneal epithelial cells on top of them ($p > 0.05$). The mechanical evaluation by statistical nanoindentation showed no alterations of the PMMA after irradiation. The optical evaluation showed high levels of transparency for ethylene oxide, 10 and 25 kGy groups. The absorbance of ultraviolet was higher for the 25 and 50 kGy groups. Technically, pre-assembly and irradiation of the B-KPro revealed no problems.

Conclusions: Sterilization of the B-KPro using γ -radiation has no detectable influence on the biocompatibility, mechanical or optical properties of the device. The pre-assembly of the B-KPro to a donor cornea, followed by sterilization with γ -radiation, allowing long-term storage and easy shipment, emerges as an efficient and safe procedure.

ELECTRONIC POSTER PRESENTATIONS EDUCATION

EP-EDU-275

Your eyes speak a million words more than your mouth. Kohl - cosmetic, protection against the evil, ophthalmic therapy or simply toxic?

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Purpose: Kohl might be just a cosmetic today but in ancient times it was considered to have magical powers. In fact, this deceptively simple beauty product may be one of the oldest known ophthalmological therapeutics.

Method: Selective literature research of books and journal articles via PubMed, Google and Scholar.

Results: Kohl was generously applied to the skin around the eyes. It served multiple roles in antiquity (e.g. veneration of the deities, fulfill religious obligations or beautify the self). As for the therapeutic effect, it was used to reduce the sun's glare and as a fly repellent. Kohl is mainly composed of the dark mineral Galena (lead sulfite, PbS). It was ground to a powder (and for the very wealthy citizens) mixed with rubies, emeralds, frankincense, medical herbs and suspended in oil, fat and milk, etc. This antibacterial ointment seems to kill pathogens and prevent blepharitis and conjunctivitis; the "therapeutic effect" being based on its high levels of lead. Prolonged application of kohl, especially in children, can result in excessive lead storage in the body which would affect bone marrow and the brain.

Conclusion: Since the Bronze Age, Kohl has been used world-wide for cultural, social and hygienic purposes. Now it is available in several forms: liquid eyeliner, pencils, paste or powder. Today its high content of lead and heavy metals demands strict regulations in its manufacture to ensure a safe product. Enhancing one's beauty with dramatic eye make-up reminds one that Cleopatra's beauty secret was not Maybelline but lead sulfate.

EP-EDU-276

Pattern of eye related encounters in general practice and are general practitioners (GP's) managing them appropriately?

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Purpose: The 2014 National Medical Care Statistics (NMCS) is a national survey representative of patient encounters visiting both public and private primary care providers in Malaysia. Pattern of eye diseases and the treatment was analysed using the NMCS 2014 data.

Method: 139 public clinics and 1002 private clinics were included in the sample. Survey weights were applied to obtain unbiased estimates of features describing the population from which the samples were drawn. Classification of the clinical information was done using the International Classification of

Primary Care Second Edition (ICPC-2 +) while the medications were classified using the Anatomical Therapeutic Chemical (ATC) classification.

Eye related reasons for encounter (RFE), diagnosis and treatment for the infective conjunctivitis were evaluated. Student t-tests were used to test for significance of differences in rates per 100 eye-related encounters between the public and private sectors.

Results: Eye related RFE contributed only 1.2% of all encounters. The 3 most common RFE were: eye pain (23.60 95% CI 15.9-31.29), red eye (19.02 95% CI 13.33-24.71) and conjunctivitis (12.91 95% CI 8.54-17.27).

The top 3 most common diagnoses were: infective conjunctivitis (43.74 95% CI 35.94-51.55), blepharitis/stye/chalazion (13.09 95% CI 8.65-17.53) and allergic conjunctivitis (4.41 95% CI 2.26-6.57).

Anti-infective agents (62.95 95% CI 51.57-74.33) were the most common topical medications in both public (66.37 95% CI 49.24-83.5) and private (58.88 95% CI 44.54-73.23) settings in conjunctivitis patients.

Systemic antibacterial agents were also prescribed and more commonly used in private setting. ($P < 0.001$).

Conclusion: Infective conjunctivitis was the most common diagnosis encountered by GP's in both private and public. Use of topical and systemic antibacterial drugs is common in conjunctivitis. There is need for further education to address the issue of inappropriate use of antibacterial drugs.

EP-EDU-277

Gadgets and quality of vision

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Purpose: Identified quality of vision for patients using gadgets.

Methods: Prospective clinical and observational study conducted in Ophthalmological clinic, University of Medicine and Pharmacy Iasi, Romania, from January to July 2016 on 60 people, divided into two groups: Group 1 - consisting of middle school 30 students, and Group 2 - with also 30 people, who are ophthalmology patients. The clinical parameters observed: visual acuity, refraction, binocular vision (BV), fusion amplitude (FA) Data were statistically analyzed (student's t-test). A questionnaire was also distributed to highlight the gadgets's impact on eyesight.

Results: In Group 1: average age=11,9±1.86 years (limits 8-15 years) and in Group 2 - average age=21,36±7.16 (limits 8-43 years), $p=0.0001$ is statistically significant. In Group 1, 66.6% patients had astigmatism, 13.3% hyperopia, 5% myopia and 15% anisometropia. In Group 2: 68.3% had astigmatism, 13.3% hyperopia, 11.6% myopia, and 6.66% anisometropia.

All patients had BV with all 3 stages with one exception, a patient from Group 2 had only second stage. The majority of patients of the two groups had low FA values: 73.33% in Group 1 and 80% of Group 2 patients had FA between 11-25 grades.

Subjective signs arising from the use of gadgets: blurred vision in Group 1 - 33.33%, Group 2 - 63.33%, $p=0.0039 < 0.05$ is statistically significant; headache: Group 1-30%, Group 2-63.33%, $p=0.007$ is statistically significant. Ocular congestion in Group 1 - 26.66%, Group 2- 20%. Phones and laptops are the most used gadgets. Average time using gadgets: Group 1=2.56±0.53 h, Group 2=3.3±0.8 h, $p=0.004$ is statistically significant.

Conclusions: Phones and laptops are the most used gadgets. Headache, blurred vision and conjunctival congestion are the most frequent symptoms. Computer Vision Syndrome is less studied, and people should be made aware of the bad effects gadgets have on eyesight.

EP-EDU-278

Bilateral leukocoria in a newborn: the importance of diagnosis

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Purpose: To emphasise the importance of ophthalmological exploration in newborns to discard possible causes of leukocoria which entail vital risk and impact in visual quality. The most frequent cause of leukocoria we should be aware of is congenital cataract.

Method: A retrospective study of a non-premature newborn infant with suspected trisomy 21 pending confirmatory karyotype. Syndromic features are found in a post-natal physical paediatric exploration. After the paediatrician's referral, an ophthalmological exploration is carried out after 19 days, detecting lack of pupilar fulgor in both eyes and pupilar occlusion. Ocular ultrasound performed shows hyperchogenic lenses.

Results: Brückner's test confirms the diagnosis of bilateral and dense congenital cataract associated to Down's Syndrome. Due to its morphology, density, age and bilaterality, early surgical treatment is recommended.

Conclusion: The study of the pupilar fulgor is of the utmost importance in the paediatric exploration of a newborn. Red reflex test should be performed in every paediatric vision screening program to detect, prevent or mitigate amblyopia, as studies show that up to 30 percent of cases of congenital cataracts worldwide are overlooked or left undiagnosed for a long time. Any alterations found should be followed up with urgent referral to the ophthalmologist who will proceed with differential diagnosis, decide the need of surgery and its timing.

EP-EDU-279

What our patients want us to tell them after surgical complications and errors (and what we actually tell them)

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Purpose: To describe and compare the doctors and patients preferences when presented with two hypothetical scenarios after cataract surgery: a complication (posterior capsule rupture) and an error (the placement of a lens with wrong refractive power).

Methods: Two anonymized questionnaires were developed (one for patients and other for doctors) presenting two hypothetical scenarios each. The questionnaires were given to 42 consecutive patients who had undergone cataract surgery by different doctors (including supervised trainees and consultants) at our institution during the last 12 months, and to 33 doctors practicing in the same region.

Results: Thirty-three doctors and 42 patients completed the questionnaire. Their mean age was 37.8±11.8 and 74.5±9.5 years respectively. Eighteen of 33 doctors were women (54.5%), and 28 of 42 patients were women (66.7%). In the complication scenario, 40 patients (95.2%) would like to have enough detail in the explanation in order to understand the situation, and 28 doctors (84.8%) would be willing to include such detail in the explanation. In the error scenario, 38 patients (90.5%) would like to have enough detail in the explanation in order to understand the situation, and 11 doctors (33.3%) would be willing to include such detail.

Thirty-four patients (80.9%) would expect actions from their surgeon in order to prevent future errors, but only 15 doctors (45.5%) would be willing to give

this information. Surprisingly, 2 patients (4.8%) would prefer their doctor to hide the occurrence of an error (both retired men from a rural background).

Conclusion: Patients from our catchment area generally prefer to receive a comprehensive explanation from their surgeon when surgical errors or complications occur. When these situations happen, it is important to gather what the patient wishes to know, as some of them (especially elder men from rural backgrounds) may prefer not to be told about the complication.

EP-EDU-280

Assessing assessment modalities in the ophthalmology module

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Assessments are an essential part of the medical curricula. 21st century doctors require more than academic knowledge to flourish in the ever growing and increasingly competitive global health care industry. It is an arduous yet critical task to design an assessment plan that is able to test competencies beyond clinical and theoretical understanding. The purpose of this presentation is to highlight the multipronged stratagem used in the Ophthalmology module at the Taylor's University School of Medicine, Malaysia.

The study was designed to analyze the various assessment methods used for the summative and formative assessment of the students that underwent the Ophthalmology module as a part of the medical program. The assessment modalities included "Single Best Answer (SBA)" type multiple choice questions and a modified MiniCEX to test the overall competence of the student at the end of the ophthalmology posting and an OSCE as well as a Modified Essay Question (MEQ) at the end of the semester. The results for three sequential batches were scrutinized to demonstrate the validity and reliability of the various techniques used and to document a constructive alignment with the course learning outcomes.

It was concluded that an effective assessment strategy must include multiple modes that can help demonstrate adequate procurement of not just cognitive and psychomotor skills but also competencies like critical analysis, communication dexterity and cultural competence.

EP-EDU-281

Ocular open trauma: characteristics of cases treated in altino ventura foundation's emergency

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Purpose: To evaluate the characteristics of cases of open ocular trauma seen at Altino Ventura Foundation's Emergency.

Methods: This was a retrospective descriptive study of the records of open ocular trauma patients treated at Altino Ventura Foundation's Emergency, during the period of January 1st to December 31 in 2013.

Results: 198 records of patients suffering from open ocular trauma were analyzed. Of these, 169 patients (85,35%) were male. The most affected age was between 20 and 49 years old, and the mean age was 31,65 years old and the standard deviation was \pm 18.8. The largest number of cases occurred in April and August.

Conclusions: This study demonstrated that the penetrating laceration was the most frequently observed ocular injury, and the most affected were males. It was observed that most patients showed visual acuity improvement after

treatment, which demonstrates the relevance of the topic and its correct management to achieve the visual recovery of the patients. Other important aspect is that the most affected patients are from the working age population, which causes impacts in the economy of the country, reinforcing the requirement of correct management.

EP-EDU-282

Eye disease of selected painters - Did ophthalmological condition changed their later work?

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Purpose: Monet, Degas, Cassat and Pissarro were all famous artist that suffer from eye disease that affected their later work. The purpose of this work is to describe briefly eye disease of selected painters.

Method: Selective literature research of books and journals via PubMed, Google and Scholar.

Results: Most of the experts in the art history agree that as Claude Monet aged, his painting noticeably lost subtlety. According to the experts his brush strokes became bolder and colors strikingly blue, orange or brown. His images lost detail and flowed into one another. The biggest problem discovering what possible disease could have any of these artists is the lack of data. Many of them hadn't talked about their personal life and about their personal health to the public. American painter Mary Cassat who was born in 1844, had a cataract that could affected her work in the later years. Unfortunately the cataract surgery in 1900s was not always successful to restore the vision. Pissarro was other artist that had eyesight problems. In his last 15 years he suffered chronic infection of the tear sac, so he had difficulty painting outdoors.

Conclusion: Although the science has discover a lot of the possible eyesight problems in art world. The main problem is that no medical records of these artist survive. There will be always a little bit of mystery in the world of art.

EP-EDU-283

Effect of mindfulness in visual function and retinal structures

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Purpose: To evaluate whether Zen meditation (a mindfulness-based practice) stimulates visual function and increases retinal and retinal nerve fiber layer (RNFL) thickness.

Methods: This cross-sectional controlled study included 36 eyes of 18 meditators and 76 eyes of 38 age- and sex-matched healthy non-meditators. The average response of both eyes in each subject was analysed. All subjects underwent evaluation of high and low contrast visual acuity (using ETDRS charts), contrast sensitivity vision (CSV) using the Pelli Robson chart and CSV 1000E test, color vision (using the Farnsworth and L'Anthony desaturated D15 color tests), stereoscopic vision using the TNO test, and retinal and RNFL thickness using optical coherence tomography (OCT). Differences in visual function and RNFL thickness were compared between groups.

Results: We found that meditators exhibited significantly better visual acuity with the three contrast levels used, and significantly better contrast sensitivity vision (CSV 1000E) than healthy non-meditators ($p \leq 0.05$). Retinal and RNFL

structural measurements did not differ significantly between groups. Ganglion cell layer thickness was moderately correlated with visual acuity, CSV, color vision, and stereoscopic vision ($p \leq 0.05$; $r > 0.6$).

Conclusions: Visual function was enhanced in meditators without significant alterations in the retinal morphologic structure. Further studies are needed to determine whether there is a causal association between mindfulness and visual function improvement.

EP-EDU-284

Eye diseases in correlation with teeth diseases

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Purpose: Indicate the types of diseases of pulp and periapical space, their diagnosis as well as therapy and that have consequential changes and diseases of the eye and the importance of accurate and timely diagnosis of infectious agents.

Method: In the literature that is available according to the textbooks that are available for the time of undergraduate, postgraduate studies and specialist service, scientific-research works, disease of the pulp and periapical space (such as reversible and pulpitis and/or irreversible, denticles, necrosis, gangrene and granulomas and clean the top of the root of the tooth) and which give the changes in the form of episcleritis (anterior or posterior, nodal or diffuse type) or uveitis (anterior, intermedial and rear or panuveitis in the harshest form). All these diseases in the eye are in the same side where is the tooth inflammation located.

Results: Patients often turn to an ophthalmologist due to interference from the eye (red eye, eye pain, or decrease in vision) and the cause of these problems is the condition of the teeth. Only a common approach both doctors problem will be solved.

Conclusion: The occurrence of red eye and changes such as the fall of vision with the pain or no pain in the tooth, the tooth should be turned off as the focus. Pain in the peribulbar and the maxillary molar region, which irradiates to surrounding areas, while the patient is not able to specify the boundaries of pain as the intensity and type of alert, on the possibility of the existence of a dental focus as the causes of the problems.

EP-EDU-285

Analysis of ocular trauma patients in Vilnius region

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Purpose: In order to ensure appropriate emergency healthcare services for patients who suffered ocular trauma, it is essential to know more about them. The purpose of this study was to analyze the structure of ocular traumas, to assess social and demographic parameters of patients with ocular traumas, to determine whether patients applying to emergency department meet the basic medical aid criteria.

Method: A prospective study of emergency eye patients was carried out in Republican Vilnius University Hospital in Vilnius, Lithuania. The data about patients' gender, age, place of residence, time of arrival, type of arrival, di-

agnosis, type of trauma, pain intensity using a smiley pain scale, soberness, circumstances of injury was collected from 9th May to 20th October, 2014.

Results: 2,759 people were analyzed. 85.4% (N = 2,356) of them were men and 14.6% (n = 403) women. 71.9% (n = 1982) lived in the city, 27.9% (n = 771) in the countryside, 0.2% (n = 6) came from abroad. Women age average 45.4 ± 17.8 , men - 39.6 ± 13.4 , $p < 0.001$. The average pain score was 3.43 (SD - 2.51 , min - 0 , max - 10 points). During daytime (8 am to 8 pm) 70.2% patients were presented, while at night (8 pm to 8 am) - 29.8%. After ocular trauma 77.3% of patients came on the same day. 93% of injuries occurred at home or public places, while 7% - at work. 5% of patients (n = 130) arrived drunk. Arrival reasons of drunk people: 78% - injuries, 16% - burns, 6% - foreign bodies. Reasons of arrival of sober individuals: 63% - foreign bodies, 32% - injuries, 5% - burns, $p < 0.001$.

Conclusion: Ocular traumas are most likely to happen to younger men. Most common traumas are foreign bodies of ocular surface. Most patients arrive to emergency department on the same day after trauma. Most patients applying to the emergency department do not meet the basic medical aid criteria.

EP-EDU-286

Perceptions and career expectation in ophthalmology among Saudi undergraduate medical students

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Purpose: To assess the perceptions about ophthalmology as a career among undergraduate medical students and to investigate determinants of career choice among the students who aspire for ophthalmology.

Method: A questionnaire was administered to all medical students (from 4th year to interns) in King Abdulaziz University Hospital. The questionnaire included 6 parts:

- demographic and academic data,
- factors influencing career choice,
- perception about ophthalmology as a career, and
- as a field,
- experience in ophthalmology; and
- impact of ophthalmology rotation on the student's perception.

Results: Among 519 respondents (61.3% females), 13.5% reported ophthalmology among their top 3 career choices (group A); these were characterized by a higher female ratio, versus those who did not chose ophthalmology (group B). Analysis of career choice determinants showed more regard for workload during residency ($p=0.021$) and less for intellectual ($p < 0.001$) or instrumental challenges ($p=0.007$) in group A versus group B. Students from group A also reported more conferences, research and community services activities related to ophthalmology.

Conclusion: A considerable number of students aspire for a career in ophthalmology, which translates into early engagements in related academic activities and readiness to meet the related intellectual and instrumental challenges.

EP-EDU-287

Epidemiology and health spending derived from ophthalmological emergencies in a third level spanish hospital: prospective study of twelve months

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Purpose: to describe the clinical and demographic characteristics of patients who demand urgent eye care in a Spanish third level hospital and quantify the health expenditure derived from complementary ophthalmologic tests.

Method: descriptive observational epidemiological study (prospective) of 12 months duration (June 2014-June 2015).

Results: during this period, 1,906 patients (2.4% of the total number of emergencies) were treated with a mean age of 51 years and with no differences between sexes. The day of greatest influx was Monday (20% of the total of emergencies) and the day of minor was Sunday (5%).

The month of greatest influx was October (194 patients) and the lowest month was February (112 patients).

The most prevalent pathology was related to the anterior segment (46.9%) followed by the posterior pole (31.8%); The urgent consultations of estrabismus-orbit were the least prevalent (4.9%).

82% of the emergencies were attended in the morning shift, 17.4% in the afternoon shift and 0.6% in the evening shift.

After urgent care, 45% were followed in the hospital and 35% were discharged; Only 7% were subsequently checked in a specialized care center (CAE). 7% of the emergencies were subsidiaries of urgent surgical treatment. The health expenditure derived from the complementary tests carried out in the urgent ophthalmological care was 27,635 euros.

Conclusion: ophthalmological urgencies account for 3% of all emergencies. It is a highly efficient service capable of rapidly diagnosing a high number of pathologies with relatively low economic expenditure compared to other services.

EP-EDU-288

George Chandler and his work "A treatise on the diseases of the eye"

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Purpose: George Chandler was an eighteenth century English surgeon, although not widely known, he published two 'Treatises' concerning Ophthalmology. We present here his work 'A Treatise on the Diseases of the Eye and their Remedies to which is prefixed the Anatomy of the Eye; the Theory of Vision; and the several Species of Imperfect Sight'

Method: We incur the pages of a facsimile edition of this impressive work, analyzing the individual chapters in parallel with a few elements of his career.

Results: As he, himself, states in the preface of his work, Chandler gave us '...a clear, concise, a sufficient comprehensive view of the Anatomical structure of the Eye, the Doctrine of Vision, the various diseases affecting this noble and useful Organ, and the best adapted methods of cure.

Conclusion: And Chandler concludes: '...How far I have succeeded must be determined by an indulgent and impartial Public..' We have to agree with him superimposing that this work consists a fundamental contribution to understanding and enriching the medical knowledge of his time.

EP-EDU-289

Myopia a major cause by refractive error among urban school children of Nepal

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Purpose: To assess the prevalence of vision impairment due to refractive error among the school children of urban slum of Kathmandu, Lalitpur and Bhaktapur districts of Nepal. It is important to know the magnitude of the problem in urban slums, where usually people of poor socio economic status reside, in order to give due priority for planning and service delivery in the future eye care program for this segment of population.

Material/Patient/Method: 40,347 school children's aged 5-16 years of 79 urban slum schools of Kathmandu, Lalitpur and Bhaktapur districts.

All the school children of class 1 to 10 for this cross-sectional prevalence study underwent uncorrected, presenting and best corrected visual acuity using retro-illuminated Snellen's chart.

Refraction was performed with streak retinoscopy and subjective method. Anterior segment, media and fundus were examined with hand held slit lamp and direct ophthalmoscope at the schools for those with best corrected visual acuity of $\leq 6/12$ in either eye. Those requiring further evaluation were referred to nearest eye hospital.

Result: Visual acuity of $\leq 6/12$ was found in 9.1%, 7.7% and 0.3% uncorrected, presenting and best corrected respectively. The glass wearing status was only 25.8%. Myopia was the main cause of visual impairment and high in female gender. of the problem are very low. More effective vision screening, refraction; optical dispensing and awareness programme need to be implemented.

Conclusion: Vision impairment due to refractive error is more common in urban slum school children. The glasses wearing status and awareness

EP-EDU-290

Initial results of a clinical study of the ophthalmic diseases among the elderly population in Sofia city

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Purpose: To evaluate the frequency of age-related ophthalmic diseases among different age groups in the elderly population, along with other significant ocular conditions, in order to improve prevention and diminish their progression. These findings are of great social significance, due to the tendency for a dramatic increase of average life expectancy worldwide, according to the data of many statistical institutions and the World Health Organization.

Methods: We present the initial results of a prospective study on the frequency of ophthalmic diseases among the elderly population of Sofia city, held as free prophylactic screening in UMBAL Aleksandrovska Hospital. Over 500 patients underwent a thorough ophthalmic examination and were divided into 6 age groups. The presence of non-ophthalmic diseases was also recorded.

In order to collect additional statistical information on the frequency of ophthalmic diseases among the defined age groups of the elderly population, this prophylactic program is still ongoing.

Results: There is a significant difference in the prevalence of ophthalmic diseases among the defined age groups in our study, as well as in the number of patients in each group who attended the screening. All age-related ophthalmic diseases such as cataracts, age-related macular degeneration, etc. tend to increase with age. Higher age also corresponds with the presence of multiple ophthalmic diseases.

Conclusions: We establish a good correlation between our results and the data of the structure of ophthalmic morbidity in developed countries. The patients who attended the screening were predominantly women of all age groups which correlates with the statistical distribution of the population. We also observed a better compliance and responsibility to their health in females. There is a clear correlation between age and frequency of all age-related nosological encounters, as well as the greater presence of combined ocular pathology with increasing age.

EP-EDU-291

Ratings of highly cited US ophthalmologists on physician review websites

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Purpose: We wanted to assess ratings of highly cited US ophthalmologists on physician review websites.

Method: This cross-sectional, Internet based study, was performed in September 2016. It includes US ophthalmologists who published at least one manuscript which was cited at least 100 times from 2006 to 2016.

Results: 106 ophthalmologists met established criteria. 78 were rated on healthgrades.com, whereas only 2 were rated on zocdoc.com. The average rating on healthgrades.com was 4,2 +/-0,9. It was comparable to previously reported US mean for a physician (~4). The rating did not correlate with the number of citations or with Hirsh index.

Conclusion: Highly cited ophthalmologists were not rated proportionately to their scientific achievements. Their reviews were mainly positive, but did not stand out in comparison to other physicians. Furthermore, we found that this group of ophthalmologists might be significantly underrepresented on particular review websites.

ELECTRONIC POSTER PRESENTATIONS ELECTROPHYSIOLOGY

EP-EPH-293

Visual evoked potentials in patients with juvenile Graves' disease with and without ocular symptoms

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Purpose: to evaluate visual evoked potentials in patients with juvenile Graves' disease (GD) with and without Graves' ophthalmopathy (GO) and to compare data with control group.

Method: Analysis of patients under 30 years of age, with newly diagnosed GD over the period of 2002.01-2012.08 was performed. The study analysis included data of 130 GD patients with GO (38) - GO+ group, and without GO (92) - GO- group. The control group consisted of 133 healthy children and adults under 30 years of age. Electrophysiological study of the optic nerve (visual evoked potentials) was done with visual electrophysiological research equipment Retiport (Roland Consult); Visual evoked potentials (VEP) study

at the occipital cortical projection recorded in response to visual stimulation. At VEP study we assessed three main waves - N75, P100, and N135. We analyzed the P100 wave, which is considered the most important and most stable of the three previously mentioned waves. The statistical analysis was performed using the f program package "SPSS for Windows", version 20.0 (SPSS Inc.). The level of statistical significance was set at $p < 0.05$.

Results: We found that in GO+ group the latency of the response to 1° stimulus was 103 ms, (101 to 106) in comparison with GO- group -102 ms (99 to 104), ($p=0.045$) and in control group 102m (100-105), ($p>0,05$, (both GO+, GO-groups). The latency to the 15° stimulus, in GO+ group was 112 ms (107.5-114,0) and GO- group 109(104-114) ($p= 0,13$). In comparison with control group 106.5 (103-113) with $p=0,005$ GO+, and $p=0,13$ with GO- groups.

Conclusion: In GO+ there was prolongation of visual response latency for 1° stimulus comparing with the data of patients GO-. The prolongation of response latency to 15° stimulus was found in GO+ comparing with the control group. These data may detect early changes of the optic nerve.

ELECTRONIC POSTER PRESENTATIONS EXTERNAL EYE

EP-EXT-295

Primary basal cell carcinoma of conjunctiva - own case report

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Purpose: Presentation of very rare conjunctival carcinoma.

Method: The patient was under our investigation. Before taking any decisions we performed ultrasonography of the eyes, anterior segment OCT and biopsy.

Results: Primary basal cell carcinoma was covering almost all cornea. The patient was qualified for surgical excision. The material was sent for histopathologic examination. It gave the diagnosis of basal cell carcinoma.

Conclusion: Although the lesion was not fully excised, after the surgery cornea was fully healed with no signs of carcinoma.

EP-EXT-296

Subcutaneous Injections of triamcinolone acetonide for upper eyelid retraction and swelling associated with thyroid eye disease

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Purpose: To evaluate the efficacy of subcutaneous triamcinolone acetonide (SCTA) injection for treatment of upper eyelid retraction and swelling associated with thyroid eye disease (TED).

Methods: In this retrospective, nonrandomized case series, 102 TED patients with inflammatory and enlargement of levator palpebrae muscle observed on MRI evaluation as the cause of the upper eyelid retraction and swelling, were managed clinically between June 2012 and December 2015. TA was injected 20mg/0.5ml subcutaneously for each eyelid. Patients showing no signs of improvement after first trial received a reinjection, and were followed up with post-injection until lid retraction and swelling had reduced. Treatment was

evaluated after 12 months of SCTA injection, and the outcome was determined by eyelid signs such as eyelid retraction, swelling, and eyelid lag. Each were graded on a 0-3 scale.

Results: Ninety-five of 102 patients (93.1%) experienced significant improvement in the amount of eyelid signs after SCTA. The average score before and after treatment was from 1.62 to 0.12 in eyelid retraction, 1.32 to 0.26 in swelling, and 1.72 to 0.30 in eyelid lag respectively. Of 108 eyelids injected, 65 (60.2%) were improved by a single SCTA, and 43 needed reinjection. In the single SCTA group, clinical activity score is lower than the other group ($p < 0.01$), however TRAbs level and MRI findings were insignificant. None of the treated eyelids exhibited intraocular pressure elevation. Eight female patients experienced menstrual disorder. Seven patients had developed diplopia and were treated systemic steroid therapy.

Conclusions: Subcutaneous triamcinolone acetonide injection provides an effective treatment to improve upper eyelid retraction and swelling associated with thyroid eye disease in the inflammatory levator enlargement stage. It is easy to administer and few untoward effects can be resolved spontaneously.

EP-EXT-297

Invasive orbital aspergillosis

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Background / Introduction: Invasive aspergillosis is well documented in immunocompromised patients. Rarely has invasive aspergillus infection been described in immunocompetent patients.

We report the case of a healthy 72-year-old man with a three week history of left orbital pain radiating to the occipital area. Examination showed gradually progressive restriction of ocular motility and non axial proptosis without resistance to retropulsion.

Magnetic resonance imaging showed a focal inhomogeneous mass extending from the left sphenoid sinus into the orbital apex.

The patient was treated with surgical excision and with antifungal medications. In tissue biopsy fungal organisms were seen and *Aspergillus fumigatus* grown in culture. The patient died 5 months after initial symptoms.

Conclusions: Although orbital aspergillosis is unusual, it should be considered in the differential diagnosis of a patient presenting with a gradually progressive orbital mass. Early recognition will help reduce the morbidity and mortality associated with this disease.

EP-EXT-298

Subconjunctival dirofilaria repens worm in Riga, Latvia

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Purpose: In recent years, due to an increase in international travels and immigration, various 'exotic' tropical diseases have been reported all over the world especially in Europe. The authors present two cases of ocular dirofilariasis for patients that presented themselves in the emergency room visits at P. Stradins Clinical University Hospital.

Methods: Video presentations of removal of both worms are available.

Results: Two female patients ages 42 and 58 years of age came for consultation after complains of itching and moving sensations in their eyes. Both patients have had previous consultations with other doctors who gave them

anticonjunctivitis medication. Visual acuity was 1,0 for both patients and no abnormal changes were found in IOP. The first patient also had a headache for four days. After slit lamp examination unusual foreign bodies were discovered and removed in the operating room. Both were sent to laboratory examinations and were labeled as *Dirofilaria repens*.

Both patients were discharged the same day with recommendations of local antibiotic treatment - Sol. Oftaquix (Levofloxacinum).

First patient came for a follow-up visit after 1 week, the eye was without any inflammation and patient had no complains, the headache was also gone. After discussion with infectologist it was decided to make a MRI (because of headache) but no medication was needed.

The second patient came for a check-up 4 days after the incident without complains. Small subconjunctival hemorrhage was seen at the location of the incision. The sutures were intact and the patient had no complains of discomfort.

Conclusion: These parasitic diseases should be kept in mind as a differential diagnosis for patients presenting with an acute red eye particularly when dealing with patients who have recently lived, worked or travelled through the affected regions.

EP-EXT-300

Effect of prostaglandin analogues on the zonule and expression of matrix metalloproteinases in the aqueous humor and lens

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Purpose: To evaluate the influence of prostaglandin analogues on the zonular fibers using a scanning electron micrography in rabbit eyes. We also measured the matrix metalloproteinases(MMP) and tissue inhibitors of metalloproteinases(TIMP) levels of aqueous humor and lens treated with topical prostaglandin analogues.

Methods: Fifty eyes from 25 New Zealand white rabbits were divided into 5 groups of 5 rabbits each. In the control group, BSS was administered once a day in the eyes. The benzalkonium chloride (BAC) group was treated with 0.02% benzalkonium chloride, the latanoprost group with 0.005% latanoprost (Xalatan[®]; Pharmacia Pfizer, Karlsruhe, Germany), the travoprost group with 0.004% travoprost (Travatan[®], Alcon Laboratories, Fort Worth, TX, USA) and the bimatoprost group with 0.03% bimatoprost (Lumigan[®], Allergan Inc., Irvine, CA, USA) for 10 months. We examined the zonular fibers using scanning electron microscope. We also measured the MMP and TIMP levels of aqueous humor and lens.

Results: Scanning electron microscopy revealed some splitting of zonular fibers in eyes treated with topical prostaglandin analogues when compared with control and BAC groups. The MMP-1/ TIMP-1 levels in the prostaglandin analogues did not differ significantly from the control and BAC groups ($P > 0.05$). There was no significant difference of MMP-1, MMP-3, TIMP-1, MMP-1/TIMP-1 levels in the lens specimens of all groups.

Conclusions: Prostaglandin analogues may induce zonule weakness. There was no association with the zonular changes and MMP and TIMP levels of aqueous humor and lens after treatment with topical prostaglandin analogues.

EP-EXT-301

Influence of the activity of thyroid-associated ophthalmopathy on the thickness of extraocular muscles, intraocular pressure and proptosis*Stoyanova N., Konareva-Kostianeva M., Mitkova-Hristova V.**Medical University of Plovdiv, Department of Ophthalmology, Plovdiv, Bulgaria*

Purpose: To investigate the thickness of extraocular muscles (EOM), the intraocular pressure (IOP) and proptosis in patients with thyroid-associated ophthalmopathy (TAO), according to the activity of the disease.

Methods: Fifty patients (100 eyes) with TAO were studied, all of them having undergone a complete eye examination and computed tomography of the orbits with measuring the extraocular muscle thickness sum (MTS) of each eye. Axial proptosis was measured with Hertel exophthalmometry, and IOP was measured with Goldmann tonometer. The disease activity of the cases was evaluated by the Clinical Activity Score (CAS). According to the activity of TAO, the patients were divided into two groups - with and without activity. **Results:** TAO activity was registered in 21 patients (42 eyes, 42%) with MTS 23.39±3.81 mm, IOP 18.43±4.16 mmHg and proptosis 22.05±3.72 mm. Twenty-nine patients (58 eyes, 58%), with MTS 19±3.21 mm, IOP 15.98±4.59 mmHg and proptosis 19.85±3.60 mm, showed no TAO activity. Statistically significant difference between two groups in MTS ($p < 0.001$), IOP ($p < 0.001$) and proptosis ($p = 0.004$, Independent Sample T Test) was found. A correlation between the MTS and IOP, and between the MTS and proptosis, has been established.

Conclusions: The activity of the disease influences the thickness of extraocular muscles, intraocular pressure and proptosis. IOP and proptosis show significant associations with the enlargement of extraocular muscles.

EP-EXT-302

The course of juvenile Graves' disease in patients with or without clinical features of Graves' ophthalmopathy*Jarusaitiene D.¹, Jankauskiene J.²**¹Hospital of Lithuanian University of Health Sciences Kauno klinikos, Eye Clinic, Kaunas, Lithuania, ²Lithuanian University of Health Sciences Hospital, Kaunas Clinic, Kaunas, Lithuania*

Purpose: To compare the course of Graves' disease (GD) in patients with Graves' ophthalmopathy (GO) - GO+ group, or without clinical features of GO - GO- group.

Method: A total of 130 patients with juvenile Graves' disease were investigated over the period of 10 years. The median age at GD diagnosis was 18 (12-20) years. GO symptoms occurred in 38 (29.2%) of GD patients. There were evaluated data about the course of the disease: duration of the first course of the treatment, remission time, relapse rate and duration to compare between groups.

Results: GO has occurred an average of 1 month from GD diagnosis, min-max values (0-24 months). Ocular symptoms occurred together with GD diagnosis in 84.4 % of GO patients. Analyzing the effectiveness of juvenile GD treatment, we can see that remission from the first attack was achieved within 14,0 months (9.25 to 24,0), of the group of GO- patients, while in patients GO+ group, remission was achieved within 33 (26-40) months of treatment. Relapses in the first 2 years manifested in 60,5% of GO+ group, and in 38,0% of GO- group patients ($p = 0,019$). The remission longer than one year was observed in 58,7% and 38,0% in GO- and GO+ groups respectively ($p = 0,003$). Only single attack without relapses of GD occurred in 5.3% of GO+ patients group, whereas 40.2% in GO- group ($p < 0,001$) during the observation period.

Conclusion: It was established that a more severe course of Graves' disease (more frequent relapses, shorter duration of remission, a longer time to achieve euthyrosis) in patients with Graves' ophthalmopathy compared with patients in the group without clinical signs of ophthalmopathy. The symptoms of Graves' ophthalmopathy mostly manifest in the beginning of juvenile Graves' disease.

EP-EXT-303

Aetius of Amida "Logos seventh: about the nature of the eyes"*Balanikas G.^{1,2}, Ziakas N.¹, Kapantais D.¹, Panagiotou D.¹, Diafas S.¹, Karampatakis V.², Topouzis F.¹**¹Aristotle University of Thessaloniki, A' Ophthalmologic Clinic, AHEPA Hospital, Thessaloniki, Greece, ²Aristotle University of Thessaloniki, Laboratory of Experimental Medicine, Thessaloniki, Greece*

Purpose: We present the seventh chapter of the 'TETRABIBLOS' the treatise of medicine, written by the byzantine physician of the 5th century A.D. Aetius of Amida, concerning the diseases of the eye.

Method: We studied different copies of his work including three manuscripts of the Mount Athos monastery of Megisti Lavra and Julius Hirschberg's translation of the work.

Results: Aetius described in his work almost every disease of the eye and also with amazing accuracy the anatomy of the eye. He epitomized the whole knowledge from the antiquity to his days.

Conclusion: The work of Aetius contains every aspect of the eye diseases and physiology, and was during the middle times and Renaissance a point of reference between the accomplished physicians of these periods.

EP-EXT-304

Orbital cellulitis - a rare but life threatening condition*Marinova E., Andreeva D., Dabov D.**Medical University Sofia, UMBAL Aleksandrovska Hospital, Ophthalmology Department, Sofia, Bulgaria*

Purpose: To raise awareness of the importance of timely diagnosis and treatment of orbital cellulitis with the presentation of a clinical case report

Methods: Evaluation of clinical symptoms, diagnostic methods, additional consultations and the timely treatment of patients with orbital cellulitis.

Case report: Seven-year-old male with no history of underlying diseases presents symptoms of pain and swelling of the right orbital region accompanied by a fever reaching 40°C for the past four days with limited effect to over-the-counter antipyretic medication. Clinical findings of the right eye revealed redness, swelling of the eyelids, ptosis, chemosis, epiphora, increased sensitivity to touch, conjunctival hyperemia with unaffected ocular movements and notable facial asymmetry. The left eye presented with findings of light swelling of the eyelids. At the time of investigation a persistent fever was recorded. A diagnosis of orbital cellulitis was made and intravenous and local antibiotic therapy was administered. Upon consultation with an ENT specialist, a radiographic scan was ordered, which on analysis revealed bilateral sinusitis.

Results: After a clinical interdisciplinary meeting, the patient was admitted to the ENT ward where a surgical intervention was performed. A significant improvement in the patient's overall state was observed.

Conclusions: The early diagnosis and aggressive management of orbital cellulitis as well as the interdisciplinary approach are of great significance for the favorable outcome of the disease.

EP-EXT-305

Early experiences with transcanalicular laser-assisted endoscopic dacryocystorhinostomy*Szalai I.¹, Nagy Z.Z.¹, Fent Z.²**¹Semmelweis University, Department of Ophthalmology, Budapest, Hungary, ²Semmelweis University, Department of Otorhinolaryngology, Head and Neck Surgery, Budapest, Hungary*

Purpose: To present our early experiences with transcanalicular diode laser assisted dacryocystorhinostomy (TCLA DCR) and to compare this surgical method with the common external DCR technique.

Method: Unilateral transcanalicular DCR surgery was carried out on 16 patients (7 male, 9 female) with a 980 nm FOX diode laser (A.R.C. GmbH). The surgery was performed under local anesthesia in 11 patients and general anesthesia in 5 patients. Osteotomy of 6-8 mm was created with a laser fiber optic inserted into the lacrimal sac via the canaliculi under visual control with a nasal endoscope and finally a bicanalicular silicone stent was implanted. Beyond the video documentation, the advantage of the endoscopic technique is the far better visualization. This could be particularly useful in case of those patients who have already undergone an endonasal surgery, since these operations may lead to development of scars, adhesions in the nasal cavity which can endanger the success of the DCR.

Results: In 15 patients, painless successful osteotomy was performed, in case of 1 male the operation was interrupted due to a technical failure of the laser hand piece. After the procedure, all 15 patients had good tear drainage, the lacrimation disappeared. Three months postoperatively, 4 patient complained of mild tearing and 2 of them had loose silicone loop. The average follow-up period was 12.44 months (9-16 months).

Conclusion: The TCLA-DCR could become a new, effective, minimally invasive procedure for treatment of the nasolacrimal duct obstruction. The endoscopic technique allows DCR to be combined with those otorhinolaryngeal interventions which are performed to treat the endonasal anatomical variations that may influence the success of DCR. Further study and longer follow-up time are necessary to confirm these results.

EP-EXT-306

Orbital abscess following sinus surgery: a case report*Luis M.E., Fernandes D.H., Crisóstomo S., Coelho N., Barroso M., Cunha J.P.**Centro Hospitalar de Lisboa Central, Lisboa, Portugal*

Purpose: To report the case of a 32-year-old female admitted to the emergency department for a suspected orbital cellulitis, with a past history of sinus surgery 5 years before and recurrent orbital infections.

Method: Patient case report with history and clinical findings, biomicroscopy, imaging results of orbit and head computed tomography (CT) and photographs.

Results: 32-year-old female with previous history of sinus surgery and recurrent infections of the orbit was admitted to the emergency department with complaints of pain exacerbated by eye movement, upper eyelid oedema, decreased visual acuity and diplopia in the right eye (RE) lasting for 3-6 days. Ophthalmologic examination revealed severe upper eyelid erythema and oedema, proptosis and generally impaired ocular motility, most evident during adduction of the RE. Pupillary reflexes were normal. Best corrected visual acuity was "hand motion" of the RE and 9/10 of the left eye. Biomicroscopy findings revealed chemosis and generalized keratitis. Imaging results of orbit and head CT revealed pre and post-septal cellulitis; multiple peri and intra-orbital abscesses of the right orbit causing mass effect on the medial rectus mus-

cle; proptosis and optic nerve stretching; communication between ethmoid wall sinus and orbit, probably of iatrogenic cause; and ethmoidal sinusitis.

Due to functional impairment of the right optic nerve the patient was submitted to surgical treatment. A combination of external drainage via Lynch incision and endoscopic sinus surgery with revision ethmoidectomy and partial middle turbinectomy was performed.

Conclusion: Orbital abscess is an uncommon potentially sight-threatening condition. Sinusitis, pre-septal cellulitis and, in our case, previous sinus surgery are major predisposing and precipitant factors. An early diagnosis, aggressive medical therapy and potential surgical management, and close collaboration between ophthalmology and ENT teams are key factors for a good prognosis.

ELECTRONIC POSTER PRESENTATIONS
GLAUCOMA

EP-GLA-310

Correlations between preoperative angle parameters and postoperative unpredicted refractive errors after cataract surgery in open angle glaucoma*Lee W.¹, Bae H.W.², Lee S.H.³, Kim C.Y.², Seong G.J.²**¹Catholic Kwandong University, International St. Mary's Hospital, Incheon, Korea, Republic of, ²Yonsei University, Seoul, Korea, Republic of, ³Eulji University Hospital, Daejeon, Korea, Republic of*

Purpose: To assess the accuracy of intraocular lens (IOL) power prediction for cataract surgery with open angle glaucoma (OAG) and identify preoperative angle parameters correlated with postoperative unpredicted refractive errors.

Method: This study comprised 45 eyes from 45 OAG subjects and 63 eyes from 63 non-glaucomatous cataract subjects (controls). We investigated the differences between preoperative predicted refractive errors and postoperative refractive errors in each group. Preoperative predicted refractive errors were obtained by biometry (IOL-master) and compared to postoperative refractive errors measured by auto-refractometer 2 months postoperatively.

Anterior angle parameters were determined using swept source optical coherence tomography. We investigated correlations between preoperative angle parameters (angle open distance [AOD]; trabecular iris surface area [TISA]; angle recess area [ARA]; trabecular iris angle [TIA]) and postoperative unpredicted refractive errors.

Results: In patients with OAG, significant differences occurred between preoperative predicted and postoperative real refractive errors, with more myopia than predicted. No significant differences occurred in controls. Angle parameters (AOD, ARA, TISA, and TIA) at the superior and inferior quadrant were significantly correlated with differences between predicted and postoperative refractive errors in OAG patients (-0.321 to -0.408, $p < 0.05$).

Superior quadrant AOD 500 was significantly correlated with postoperative refractive differences in multivariate linear regression analysis ($\beta = -2.2925$, $R^2 = 0.404$).

Conclusion: Clinically unpredicted refractive errors after cataract surgery were more common in OAG than in controls. Certain preoperative angle parameters, especially AOD 500 at the superior, were significantly correlated with these unpredicted errors.

EP-GLA-311

Carotidocavernous sinus pathology implications on visual function-case presentation

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Purpose: Endocranial aneurysm of the Internal Carotid Artery (ICA) is fusiform or saccular enlargement of the lumen of the blood vessel for at least 50% of the anatomy diameter. Carotidocavernous fistula (CCF) is an abnormal communication of the carotid arterial system and sinus cavernosus (arterio-venous fistula).

Classification: Direct-indirect, traumatic-spontaneous, high-low pressure. Clinical presentation: conjunctival congestion, orbital "brui", pulsating exophthalmos, ophthalmoplegia externa, secondary glaucoma. The descendent atrophy of the optic nerve is due to lesion of the third neuron of the visual pathway. Secondary glaucoma is exogenous due to elevated venous pressure.

Method: M.D(50,F)referred to Eye clinic due to headaches, ptosis and visual loss OS after operated left-sided arterio-venous fistula and right-sided ICA aneurism.

VOD=0,8 VOS=L+P+ TOU=22mmHg Tonometry TOU=18-25mmHg

SLOS: RAPD/ FOD: C/D=0,6/II FOS:C/D=1,0/III

Gonioscopy (OS): AC angle opened (IIIgrade-Shaffer)

SAP (Humphrey) ODCConcentric narrowing of visual field to 15 degrees (MD = 14.8 dB); OS:Sensitivity of the retina was not registered (MD = 27.0 dB)

OCT: OD: RNFLavg = 70.06;Savg = 64/ OS RNFL Avg = 39.31

VEPOD: Normal N75-N145-P100 complex; OS-P100 (128ms), reduced amplitude.

CT: Condition after craniotomy temporally on both sides. Brain tissue infra and supratentorially without densitometry alterations.

Results: Presentation of operated left carotid-cavernous fistula and right aneurism, OS blindness, year after surgery due descending optic nerve atrophy and concentric constriction of the visual field in remaining OD.OU: Secondary OAG.OS Atrophio PNO. Administered Sol Timolol, Dorzolamide, Brimonidine, Latanoprost reduced IOP to TOD= 12mmHg.

Conclusion: Paper presents severe,life treating vascular disease, with compressive optic neuropathy left, and descending consequent atrophy and glaucomatous optic neuropathy in right eye and approach in order to preserve vision.

EP-GLA-312

Combined phacoemulsification and endoscopic cyclophotocoagulation - 2 years of observations

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Purpose: 2-year observations of 40 patients after combined phacoemulsification and endoscopic cyclophotocoagulation

Method: Combined phaco-ECP was performed in our clinic between 2012 and 2015 by three experienced surgeons. We performed 141 procedures. In this study we included 40 patients (50 procedures) that had 2 years of observations. All patients at each visit were checked visual acuity, IOP and were examined in a slit lamp.

We focused on measurement of IOP and possibility to reduce the number of topical antiglaucoma drugs.

Results: The mean IOP before the surgery was 16,1 mmHg while after the surgery 12,8 mmHg. Among 31 patients we could reduce the number of anti-glaucoma topical drugs. The mean reduction was 1,4 drugs.

We did not observe any serious complications. Most common ones were elevated IOP in the short time after the surgery and inflammation after the surgery.

Conclusion: Endoscopic cyclophotocoagulation seems to be safe procedure that can be combined with phacoemulsification in patients with glaucoma. In some cases it helps to reduce the number of antiglaucoma drugs.

EP-GLA-313

Retinoid-X-receptor (RXR) targeting can rescue inner retinal structural and functional deficits in mouse model of glaucoma

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Purpose: Retinoid-X-Receptors (RXR) belong to the family of nuclear receptors comprising α , β and γ isoforms. RXRs are involved in gene expression, metabolic signalling pathways and glial uptake of A β in brain and enhances its clearance. Several studies indicate the association of neurotoxic A β accumulation in the retina with glaucoma mediated retinal neurodegeneration.

In this study, we evaluated the efficacy of RXR agonist Bexarotene in modulating functional and structural parameters of the retina under glaucoma conditions.

Methods: In C57BL/6 mice (n=27) a model of chronic glaucoma was generated by injecting microbeads into the anterior chamber and eyes were assessed for changes in function and structure with a particular focus on the inner retina. Animals were treated with Bexarotene 100 mg/kg/p.o. for 2 weeks and vehicle treated animals were used as control.

Retinal function of the mice was analysed by electroretinogram (ERG) and positive scotopic threshold response (pSTR) recordings. Retinal structural assessment was carried out using H & E staining.

Results: All eyes injected with microbeads experienced a sustained increase in IOP for 2 months (23.3 \pm 0.2 vs 10.4 \pm 0.7mmHg (p< 0.0001). Exposure to chronic increase in IOP resulted in reduced pSTR amplitude suggesting inner retinal functional deficits.

The loss of pSTR amplitude was protected to a significant extent by Bexarotene treatment in the glaucomatous eyes 39.5 \pm 11.5% to 15.6 \pm 8.3% (loss \pm SD; n=16, p<0.05).

Morphometric analysis demonstrated significant neural preservation in the ganglion cell layer of glaucoma mice that were treated with the Bexarotene: 84.11 \pm 7.5; 32.7 \pm 4.6 and 59.7 \pm 3.2 (control; glaucoma and glaucoma + Bexarotene respectively; n=9, p<0.0001).

Conclusions: This study suggests that modulation of RXRs by Bexarotene could have beneficial effects to limit the progression of neuronal loss associated with experimental glaucoma, which could have applications in other neurodegenerative disorders.

EP-GLA-314

eNOS activity in CAV1 deficient mice*Lei Y., Song M., Wu J., Xing C., Sun X.**Eye and ENT Hospital of Fudan University, Shanghai, China*

Purpose: To investigate endothelial nitric oxide synthase (eNOS) activity and the response of conventional outflow facility to NO donors and a NOS inhibitor in CAV1 knockout (KO) mice.

Methods: IOP was measured in both CAV1 KO and wild type (WT) mice by rebound tonometry. Expression of CAV2, eNOS, eNOS-phospho Ser¹¹⁷⁷, eNOS-phospho Thr⁴⁹⁵, Akt, Akt-phospho Ser⁴⁷³ and nitrotyrosin was measured by western blot analysis. Nitric oxide (NO) donors SNP or SNAP or NOS inhibitor L-NAME were administered topically. Outflow facility was measured by perfusing enucleated mouse eyes at multiple pressure steps.

Results: CAV1 KO mice have elevated IOP and reduced conventional outflow facility compared to wild type (WT) mice. CAV2 expression was absent in CAV1 KO mice but we observed increased expression of eNOS, eNOS-phospho Ser¹¹⁷⁷, Akt, Akt-phospho Ser⁴⁷³ and nitrotyrosin, and reduced expression of eNOS-phospho Thr⁴⁹⁵. Topical application of SNP significantly reduced IOP in WT and KO mice by 1.6 fold (n=6, p< 0.05), but SNAP did not change IOP significantly (n=6, p>0.05). In comparison, the NOS inhibitor L-NAME significantly increased IOP by 50% in KO mice (n=6, p< 0.05). SNP and SNAP significantly increased, whereas L-NAME significantly reduced, pressure-dependent drainage in KO animals.

Conclusions: Although CAV1 KO mice had elevated IOP and decreased outflow facility, CAV1 deficiency (and possibly the loss of CAV2) resulted in increased eNOS activity. The pressure elevation may be due to increased tyrosine nitration of protein kinase K and impairment of its activity in KO mice.

EP-GLA-316

Incidence of steroid responders in operated squint patients*Shukla S., Goel Y., Kamlesh K., Rastogi A., Khanam S.**Guru Nanak Eye Centre, Maulana Azad Medical College, New Delhi, India*

Purpose: To study the incidence of steroid responders in operated squint patients after being administered topical steroids.

Method: An observational study was conducted at the strabismus clinic of a tertiary care centre. 60 patients, with operated squint surgery who were prescribed 1% topical prednisolone acetate 6 hourly in the post-operative period, were included in the study. Intraocular pressure was measured pre-operatively and 3 weeks post-operatively by applanation tonometry.

Results: The mean intraocular pressure of all the patients pre-operatively was 13.98 mmHg and post-operatively was 17.78 mmHg with a mean rise of 4+/- 3.36 mmHg. 5 patients out of the total of 60 were found to have a difference of more than 10 between the pre-operative and post-operative measurements, which was statistically significant. (Mean rise of 12 +/- 2mmHg).

Conclusion: It is imperative to monitor post-operative intraocular pressure in order to detect steroid responders and prevent the occurrence of steroid induced glaucoma in operated squint patients who are being administered topical steroids.

EP-GLA-317

Correlation between structural damage of optic nerve head and functional loss in glaucoma*Petri T.¹, Petri O.², Jaho J.³**¹"Ungjillezimi" Clinic, Department of Ophthalmology, Tirana, Albania,**²Institute of Public Health, Tirana, Albania, ³University Hospital Center**"Mother Tereza", Tirana, Albania*

Purpose: To evaluate the ability of progressive damage of retinal nerve fiber layer (RNFL), measured with SD-OCT, to predict future development of functional loss in patients with suspected glaucoma.

Method: The study included 591 eyes suspected for glaucoma. The patients were followed with three periodic examinations during five years. All patients had normal standard automated perimetry results at baseline. Conversion to glaucoma were considered cases when two or more visual field defect developed in the same side of the horizontal meridian, with at least one of the defects with significance p < 0.01 at probability plot. Presence of progressive damage of RNFL was evaluated by scanning of optic nerve head with OCT-spectralsis.

Results: From 591 eyes only 38 cases were converted in glaucoma at the third examination. Of them 24 had familiar history for glaucoma. In our study patient with familiar history had an increasing risk for conversion to glaucoma of 6,8 times comparing to patient without familiar history, with a confidence interval CI 95% [3.918- 12.062]. Values of IOP ≥21 mmHg (intraocular pressure) resulted to increase the risk of visual field damage to 2,4 times with CI 95% [1.567- 27.987], comparing with values of IOP ≤ 21 mmHg.

We found that 39% of examined eyes had progressive damage of RNFL. Only 46% of those eyes were converted to glaucoma. On the other hand, 5% (2 cases) of converted eyes did not showed progressive damage of RNFL. Presence of progressive damage of RNFL resulted in increasing 26.8 times the probability of conversion to glaucoma with CI 95% [6.663- 108.494].

Conclusion: Presence of progressive damage of RNFL with OCT -spectralsis was strong predictive factor for future development of functional loss in glaucoma. These findings suggest the importance of careful monitoring of RNFL and its role as reference for diagnostic test in glaucoma.

EP-GLA-319

Selective laser trabeculoplasty in primary angle closure glaucoma and primary open angle glaucoma after laser peripheral iridotomy*Kazakova D.**University Hospital 'Lozenetz', Ophthalmology Department, Sofia, Bulgaria*

Purpose: To evaluate the outcomes of selective laser trabeculoplasty (SLT) in patients with primary angle closure (PAC/PACG) following a YAG peripheral iridotomy (PLI) compared to primary open angle glaucoma (POAG).

Method: A case study compared the effectiveness of SLT in PAC/PACG to POAG. Data from patients who underwent SLT after a successful PLI for PAC/ PACG (PAC/PACG group) with an opening of the angle for at least 180 degrees were compared to a POAG group that was randomly matched to the PAC/PACG group for age, baseline intraocular pressure (IOP), and severity of glaucoma.

Data were collected on the change in IOP from baseline and reduction in number of medications following SLT in both groups. SLT was considered successful when IOP decreased by ≥20% of the baseline IOP without further medical or surgical intervention or a reduction in glaucoma medications by ≥1 from the baseline number.

Results: In the PAC/PACG group, 10 eyes with persistent IOP elevation following successful PLI underwent SLT in areas where the angle was open for at least 180 degrees. In the POAG group, 10 eyes underwent SLT. Both groups had 360° treatment at 0.53 and 0.62 mj per laser application respectively. In the PAC/PACG group, IOP was 19.3±6.5 mmHg at baseline and 15 ±3.5 mmHg 10 months following SLT and the number of medications decreased from 2.3 at baseline to 1.4. In the POAG group, IOP 19.6±5.6 mmHg at baseline, and 16.1 ± 3.7 mmHg, 11 months following SLT and the glaucoma medications decreased from 2.3 to 1.1. The success rate of achieving clinically significant IOP reduction of 20% or more from baseline, or discontinuation of one or more of glaucoma medications was observed in 8 eyes in the PAC/PACG group and 7 eyes in the POAG group. An IOP spike occurred in 1 eye with PACG/PAC and 2 eyes with POAG and was controlled with topical medications.

Conclusion: The safety and efficacy of SLT was equivalent in PAC/PACG and POAG.

EP-GLA-320

Secondary glaucoma concomitant to orbital pseudotumor and ciliary body cysts - case presentation

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Purpose: Secondary glaucomas are caused by open/closed angle mechanism, due to ocular, extrabulbar disease or jatrogenic (medicamentous/surgical treatment). Extrabulbar conditions rises episcleral venous pressure: reduced trabecular outflow. Orbital inflammatory disease(OID)-orbital pseudotumor is rare, benign, inflammatory orbital lesion. Classification: lacrimal, anterior, posterior, diffuse, myositic. Clinically: unilateral proptosis, diplopiae, decreased vision. May be acute, recurrent or chronic. Differential diagnosis: orbital vasculitis, cellulitis, thyroid ophthalmopathy, tumors. Pathohistologically: lymphoid, plasma cell, giant cell infiltration. Cysts(primary/secondary): form in iris/ciliary body. Embriologically are neuroepithelial origin/pigment epithelium splitting. Narrowing AC angle possible.

Method: Z.B(36)male, OS: proptosis, without systemic comorbidity; first visit march/2014. **VOD**=1,0 **VOS**=0,7cc+0,50DSph=0,9 **TOD**=19mmHg/**TOS**=33mmHg. **SLOS:** Exophthalmus, iris prominence at 5, shallower AC periphery. **FOU:**C/D=0,6/II. **Exophthalmometry** (III/2014) OD=16mm/OS=26mm. **Tonometry** TOD=19-28mmHg/TOS=24-33mmHg. **Gonioscopy(OS):** AC angle narrowed (III-II Shaffer), prominent iris at 5 do not close AC angle. **SAP(Humphrey)** OD(VI/2014) Relative paracentral scotoma (MD=4,41; PSD=2,45)/OS (MD=1,58). **OCT:** avgRNFL (OD=89,05/OS=96,81). OD: Thinner inferior RNFL. **Ultrasound (Bscan) OS (IV/2014)** Widened orbital fat tissue, diffuse muscles thickening (MRInt=3,91/MRLat=2,02/MRsup=2,2/MRinf=2,53) **OS (VIII/2015)** OD)MRint=3,0 / (OS) MRint=4,1. **UBM(OS):** Cystic ciliary body formations at 5, lifts iris (3mm). **CT:** Normal. **Endocrinologist:** FT4=13/TSH=0,03. **SLTOS:**0,9mJ

Results: OS: Secondary OAG. Pseudotumor orbitae. Ciliary body cysts; OD OAG (preperimetric). Timolol/Dorsolamide/Brimonidine/Bimatoprost/Acetazolamide controlled IOP.SLT was performed. Orbital inflammation/muscle involvement indicates pseudotumor orbitae.

Conclusion: Mild cases resolve without treatment. Severe cases: corticosteroids/low-dose radiation. Understanding OID, and treatment, prevented optic neuropathy.

EP-GLA-321

Conjunctival coating for treating avascular and cystic blebs. Analysis using anterior segment optical coherence tomography

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Introduction: Bleb-related infection is one of the most feared complication of glaucoma filtering surgery due to its devastating visual consequences. Resection of filtration blebs allows us to maintain the subsequent functioning intact filtration while maintaining adequate IOP control. Likewise, we avoid risks of infection due to fistulization or thinning and the discomfort generated by polycystic and avascular blebs.

Clinical cases: We present two cases of conjunctival coating, the first after a trabeculectomy in another center, in which is combined surgery of cataract and conjunctival coating in a large cystic bleb.

The second one is a non-penetrating deep sclerectomy, performed at our center that after presenting a blebitis successfully treated we decided to do a conjunctival coating to prevent a new infection.

Anterior segment optical coherence tomography (CASIA) before and after surgery are shown in both cases.

Conclusions: Avascular and cystic blebs are in many cases related to the use of antimetabolic agents in the filtering surgery, especially the Mitomycin C which may increase the risk of blebitis and endophthalmitis. Early surgical treatment with conjunctival coating is important, as prevention of those possible complications. We believe that resection is a good technique for IOP control, prevention of complications and patient well-being.

EP-GLA-322

Experience of Ex-PRESS Filter implantation in surgical glaucoma treatment

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Purpose: To analyze the clinical efficacy of mikroshunt Ex-PRESS in glaucoma patients.

Method: The study covered 24 patients (27 eyes), average age (71,4 ±17,7) years who suffered from moderate (10 eyes) and advanced (17 eyes) glaucoma with preoperative level of intraocular pressure (IOP) (30,48±5,56) mmHg. All patients were performed Ex-Press implantation.

Results: Three months after the operation the average IOP in patients was (15,55±3,54) mmHg, in six and twelve months IOP level was (15,86±4,24) and (15,95 ±4,24) mmHg respectively; (p<0.05). Hypotensive effect of drainage device was maintained over the next two years.

Postoperative complications were observed in four cases (14.8%). Hyphaema that did not require treatment - 1 case (3.7%).

In a year after the operation ophthalmohypertension was diagnosed in 1 case (3.7%), which was successfully eliminated conducting anti-inflammatory therapy and massage of the eyeball.

In 2 years one patient (3.7%) developed cystic conjunctival cushion and limited recurrent corneal erosion.

One patient (3.7%), with the concomitant somatic pathology history, who systematically used antiplatelets and anticoagulants, during and after operation had rehyphaema, partial haemophthalmus. In a year the operated eye turned only seeing eye, with VA 0.04 that allowed the patient to serve himself.

Conclusion: Drainage device Ex-Press implantation has allowed all patients with moderate and advanced glaucoma to achieve normalization of IOP for three years, abolish local hypotensive therapy, avoid progression of glaucomatous process.

EP-GLA-323

Evaluation of choroidal thickness in patients in patients with pseudoexfoliation syndrome

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Purpose: To compare the choroidal thickness using spectral-domain optic coherence tomography (SD-OCT) in patients with pseudoexfoliation syndrome (PEX) and age-sex matched healthy control subjects.

Methods: This prospective study consisted of 24 PEX patients and 24 age-sex matched healthy controls. All patients underwent detailed ophthalmic examination as well as choroidal thickness measurement using SD-OCT (Heidelberg HRA-OCT Spectralis®, Heidelberg Engineering GmbH, Heidelberg, Germany). The choroidal thickness measured at the fovea, 1.5 mm nasal and temporal to the fovea. Mann Whitney U and chi square test were used for statistical analysis.

Results: The mean age was 65.04±5.44 years (range, 57-79 years) in PEX group whereas it was 64.48±6.67 years (range, 55-77 years) in the control group (p=0.84). There was no significant difference in terms of sex and axial length between groups (p=0.66, p=0.32; respectively) The mean choroidal thickness was found as 230.26±51.6 μ and 259.7±64.7 μ (p=0.065) at sub-foveal area, 210.9±53.5 μ and 266.32±71.3 μ at 1.5 mm nasal to the fovea (p=0.004), 218.6±49 μ and 262.7±87.9 μ (p=0.087) 1.5 mm temporal to the fovea for PEX group and control group, respectively.

Conclusion: Although PEX group had lower choroidal thickness in three measurements, it was significantly in the nasal choroid.

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Comparison of the effectiveness of trabeculotomy versus trabeculotomy combined trabeculectomy for congenital glaucoma

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Purpose: To compare the results of the conventional trabeculotomy versus trabeculotomy combined trabeculectomy in primary congenital glaucoma.

Method: The patients with primary congenital glaucoma were randomly assigned to either trabeculotomy or combined trabeculotomy - trabeculectomy between 2013 and 2016. Preoperative and postoperative intraocular pressures, examination findings and additional surgical treatments were recorded.

Results: 34 eyes of 21 patients (8 women, 13 men) were included in the study. All cases had buphthalmus and corneal haze in first examination.

The average age of the patients at the time of operation was 9 months (17 days- 36 months) in Group 1 and 8.5 months (14 days-33 months) in Group 2. (p>0.05) The mean preoperative intraocular pressure was 33 mmHg (24-45 mmHg) in Group 1; 36 mmHg (24-48 mmHg) in Group 2. (p>0.05) The mean postoperative intraocular pressure in group 1 was 19 mmHg (8-37 mmHg) at 1 month postoperatively and 18 mmHg (10-28 mmHg) at the 6-month follow-up visit (p>0.05).

The means in group 2 was 21mmHg (10-33 mmHg) and 20mmHg (14-29 mmHg), respectively (p>0.05).

Reoperation was required in 6 patients (35%) of group 1 (3 eyes were treated with bleb revision, 3 eyes were treated with trabeculectomy) and 3 patients (17.6%) of group 2 (2 eyes were treated with bleb revision, 1 eye was treated with trabeculectomy) patients during the follow-up period.

Conclusion: In this study, similar effectiveness was observed between trabeculotomy and trabeculotomy combined trabeculectomy for primary congenital glaucoma. It was seen that reoperation requirement was less in combined surgery group.

EP-GLA-325

Effect of trans-resveratrol on the extracellular matrix deposition by human trabecular meshwork cells

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Purpose: Intraocular pressure (IOP) lowering remains the mainstay of glaucoma treatment. Elevated IOP in glaucoma is associated with increased extracellular matrix (ECM) deposition in trabecular meshwork resulting in increased aqueous humor outflow resistance. Our previous studies showed that topical trans-resveratrol (TR) reduces IOP in rats with steroid-induced ocular hypertension. Hence, in the current study, we evaluated the effect of TR on collagen I (COLI), collagen III (COLIII), collagen IV (COLIV) and fibronectin (FN) expression by dexamethasone (DEX)-treated human trabecular meshwork cells (HTMC).

Method: DEX-pretreated HTMC were incubated with TR in the concentration range of 3.125 - 25 μM for 2 and 7 days. Subsequently, culture media was collected to quantify expression of COLI, COLIII, COLIV and FN using ELISA. Immunocytochemistry was done to observe for the expression of above ECM components.

Results: DEX treatment caused increased COLI expression by HTMC by 1.45 and 1.29 folds on days 2 and 7, respectively (p< 0.05). Compared to DEX-treated group, COLI expression in TR-treated group was 1.65 (p< 0.05) and 1.54 fold (p< 0.05) lower at 12.5 μM concentration on day 2 post-incubation. On day 7, the same was 1.43 folds (p< 0.05) lower for both concentrations. COLIII expression was increased by 1.64 (p< 0.05) and 2.08 folds (p< 0.05) on days 2 and 7 post DEX-incubation whereas at the same time-points it was reduced by 1.64 (p< 0.05) and 2.34 folds (p< 0.05) at 12.5 μM and 1.45 and 2.04 folds (p< 0.05) at 25 μM concentration compared to DEX group. Similarly the expression of COLIV and FN was also significantly increased after DEX treatment but treatment with TR resulted in significantly decreased expression at 12.5 and 25 μM concentrations at both time points.

Conclusion: TR significantly reduces the expression of ECM components by DEX-treated HTMC.

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EP-GLA-326**Assessment of changes of the anterior segment of the eye in glaucoma patients***Melnyk V.**Clinic Visiobud, Kiev, Ukraine*

Purpose: Hydrodynamic disorders of intraocular liquid is a very important reason in IOP increase and glaucoma progression. If the speed of intraocular liquid becomes lower, according to Bernoulli rule, pressure on the walls of the vessel (eye) becomes higher. That's why different changes of structures of the anterior segment of the eye can be the key in glaucoma progression. Changes of the lens are widespread in open-angle glaucoma patients. As operation of choice in open-angle glaucoma we usually perform modified tunnel trabeculopuncture. We pointed that this type of operation has low effectiveness in comparison with combined phaco-emulsification with modified tunnel trabeculopuncture.

The aim of our work is to assess changes of the structures of the anterior segment of the eye in operated open-angle glaucoma patients.

Method: We examined 1789 eyes that were operated by combined phaco-emulsification and modified tunnel trabeculopuncture technique, and 4666 eyes only cataract operated patients. We checked length of the eye and of the lens, anterior chamber depth, presence of the pseudoexfoliations and lens stability (weakness of ligaments Cini). In both groups we excluded high myopic and hypermetropic patients with eye length less 21,5mm and more 25,5mm.

Results: Glaucoma group of patients had mean eye length 23,77 mm, mean lens length 4,89mm, anterior chamber depth - 3,03mm. 92% patients had pseudoexfoliations, weakness of ligaments Cini on different stage we observed in 27% cases. Cataract group of patients had mean eye length 23,64mm, mean lens length 4,11mm, anterior chamber depth - 3,29mm. We observed pseudoexfoliations in 22% cases, weakness of ligaments Cini in 4% cases.

Conclusion: Eye length in glaucoma and cataract patients is similar. In glaucoma patients length of the lens is higher on 19%, the anterior chamber depth in smaller on 8,5%. All these changes in the anterior segment can be very important in glaucoma development.

EP-GLA-327**Effectiveness of operation in patients with open-angle glaucoma***Melnyk V.**Clinic Visiobud, Kiev, Ukraine*

Purpose: Long-term treatment of open-angle glaucoma can lead to the low hypotensive effect of operation. The possible reasons of this phenomena are morphological changes in trabecular meshwork and high risk of scarring. Scarring usually higher in patients with eyes with persistent inflammation. Drops for glaucoma patients can lead to so inflammation especially drops with preservatives. We examined effectiveness of operation in open-angle glaucoma patients with and without treatment before operation.

Method: All patients were operated during 2012 by the same operation technique - phacoemulsification with modified tunnel trabeculopuncture. The first group of patients (177 eyes) had got some hypotensive drops before operation, the patients of the second group (38 eyes) were operated directly after glaucoma determination without any treatment before operation. During four years 2012-2016 we examined IOP and glaucoma compensation through optic nerve examination (computer perimetry and OCT of optic nerve) of these patients. If we had high IOP or deterioration of condition of optic nerve we defined these cases as low operative effectiveness cases. According to the situation we prescribed some hypotensive drops or performed additive operation.

Results: Mean IOP in the first group of patients was 19,7mmHg, low effectiveness of operation we observed in 37% (we used hypotensive drops in 31% cases, operation in 6% cases).

Mean IOP in the second group was 17,7mmHg, low effectiveness of operation we observed in 14% (in all cases use of hypotensive drops was enough for glaucoma compensation).

Conclusion: Effectiveness of anti-glaucoma operation is much more higher in patients, which didn't use any hypotensive drops before. It can be explained by two reasons:

- 1) use of drops gives opportunity to prolong term before operation, that's why morphological changes in eye's drainage system are more developed;
- 2) drops with preservatives make risk of inflammation and scarring higher.

EP-GLA-328**Needling post trabeculectomy failure. Risk factors and anti-fibrotics influence. Long term results***Carvalho B.¹, Cardigos J.¹, Noronha M.¹, Silva N.¹, Abegão Pinto L.², Domingues I.¹, Gomes T.¹, Reina M.¹**¹Centro Hospitalar de Lisboa Central, Lisboa, Portugal, ²Hospital de Santa Maria, Lisboa, Portugal*

Purpose: To present a long term analysis of needling results after trabeculectomy failure, it's risk factors and the influence of anti-fibrotics.

Method: Retrospective study in patients submitted to needling with complete clinical information about intraocular pressure, medical treatment, preservative eye drops information, ocular surface disease, combined surgeries or complications. Pre-operative, one year post-operative and last visit appointments were considered. Anti-fibrotics used in trabeculectomy and in needling (MMC and 5-FU) were identified for comparative analysis. Absolute success was considered IOP < 18 mmHg without therapy and relative success IOP < 18 mmHg with treatment.

Results: 93 eyes were included. 51.5% of the patients did needling in the first 90 days. Mean and standard deviation for the considered follow up periods for number of hypotensive eyedrops were 3.34 ± 1.12 , 1.39 ± 1.18 and 1.82 ± 0.13 ; and for IOP 23.3 ± 5.68 , 14.82 ± 4.23 and 13.99 ± 3.21 ($p \leq 0.05$).

Among the number of pre-operative drugs, eye drop with or without preservatives, gender, time lag to reintervention, complications and the defined success there were no significant differences.

Absolute success was obtained in 24.7% of the cases. In 29.1% of the patients, needling reintervention was needed and n 8.6% final IOP was > 18 mmHg.

The probability of successful applying MMC seems to be superior to 5-FU, OR = 2.699, for the same gap between surgeries.

Conclusion: Needling procedure with anti-fibrotics revealed a safe profile and prolonged efficacy, avoiding new filtering procedures.

EP-GLA-329

Glaucoma secondary to alkaptonuria? About a clinical case

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Purpose: Alkaptonuria is a rare disease of tyrosine metabolism. Results from a complete deficiency of the homogentisic acid oxidase enzyme, leading to an increase of homogentisic acid in the blood and deposition in different organs and tissue. Ocular manifestations in alkaptonuria are common and may aid in the diagnosis of the disease.

The purpose of this paper is to make a description of a rare clinical case of alkaptonuria, focusing on its ocular manifestations and possible relation with glaucoma.

Methods: Case report.

Results: Male patient, 70 years old, with ochronotic arthropathy, kidney stones and hyperpigmented skin lesions.

Complain of progressive reduction of visual acuity.

Ophthalmologic examination revealed a visual acuity of 20/50 and an intraocular pressure of 25mmHg on both eyes. Biomicroscopy revealed hyperpigmented lesions of the conjunctiva, sclera and perilimbic cornea and in funduscopy was seen an optical disc with suspected cup-disc ratio (0.7x0.7).

OCT and perimetry showed lesions compatible with glaucoma.

This clinical signals are suggestive of alkaptonuria diagnosis and after exclusion of other causes, it was established the diagnosis of alkaptonuria and secondary glaucoma.

Conclusions: Hyperpigmentation of the sclera, conjunctiva, eyelid are the main ocular manifestations and perilimbic "oil drop" cornea pigmentation is considered a pathognomonic manifestation of alkaptonuria. The association between ochronosis and glaucoma is not fully established. The simultaneous occurrence of the two conditions may be coincidental or glaucoma may be secondary to the deposition of pigment in the trabecular meshwork as some studies suggest.

EP-GLA-330

Tube erosion and its treatment after ahmed glaucoma valve implantation in a patient with congenital aniridia and glaucoma

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Purpose: To present the long-term outcome of a patient with congenital aniridia and glaucoma who has managed with Ahmed glaucoma valve implantation.

Method: A 3,5 years old girl who complained of nystagmus and strabismus in both eyes since birth was followed up with bilateral total aniridia and glaucoma. The fundus examination revealed an increased cup-to-disc ratio with high intraocular pressures bilaterally.

Despite full medical treatment, the intraocular pressures were not regulated, and Ahmed glaucoma valve implantation was performed on both eyes. At postoperative 24th month, the patient presented with complaints of redness with watery discharge in his right eye.

There was an erosion of the conjunctiva over the tube, 4mm far away from the limbus, in the right eye.

Results: The area of the erosion in the right eye was closed with double layer amnion membrane. During surgery, the first layer of amniotic membrane is applied over the tube with the epithelial side up.

The conjunctiva is secured to the underlying episclera/amniotic membrane with 10/0 nylon sutures. A second layer of amniotic membrane is then applied over the epithelial defect; this is placed epithelial side down and secured to the underlying conjunctiva/amnion. This second layer of amniotic membrane acts as a bandage to protect the underlying membrane and aid underlying epithelial regrowth.

It was observed that the intraocular pressure was normal and the conjunctival defect was closed at the follow-ups.

Conclusion: Congenital aniridia with glaucoma can be treated successfully by shunt surgeries, however tube erosion may develop in some of the cases, so that patient complaints and findings should be carefully examined. In the management of tube erosions with conjunctival deficiency, amnion membranes can be successfully used at appropriate cases.

EP-GLA-331

Intravitreal aflibercept: does eylea cause or worsen glaucoma? A retrospective review of 36 months

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Purpose: To evaluate long-term effects of Aflibercept injections on intraocular pressure (IOP) in eyes with neovascular age-related macular degeneration (AMD), diabetic macular edema (DME) or retinal vein occlusion (RVO).

Method: This retrospective study (January 2014 to January 2017) enrolled 236 patients who underwent multiple (more than three) intravitreal Aflibercept 2mg injections (0.05ml) at the retina department in our hospital and who had not had any anti-VEGF previous injections of any kind (naïve eyes). Data such as age, sex, previous surgeries, history of glaucoma or ocular hypertension with its treatment and retinal pathology were collected. IOP elevation was defined as an increase of 5 mmHg over the baseline.

Results: Increases in intraocular pressure are typically transient and controlled with topical medication.

Conclusion: A history of multiple Aflibercept injections was not a significant risk factor for IOP elevation in our study. Although we found an IOP elevation was more common in eyes with glaucoma or previous ocular hypertension.

EP-GLA-332

Comparison between time-domain and spectral-domain optical coherence tomography to detect retinal nerve fiber layer defects in glaucoma patients

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Purpose: To compare the sensitivities of time-domain optical coherence tomography (Stratus OCT) and spectral-domain optical coherence tomography (Spectralis OCT) in detecting retinal nerve fiber layer (RNFL) defects in patients with glaucoma using their built-in normative databases

Methods: Fifty-two eyes of 35 open angle glaucoma patients with photo-graphically identified RNFL defects were included. 69 total hemiretinas were analyzed using the fast RNFL scan in Stratus OCT and the circle scan in Spectralis OCT. The results of OCT parameters were evaluated based on their built-in normative databases at the 5% and 1% abnormal levels. The diagnostic sensitivity of each parameter was compared between the two devices.

Results: The Spectralis OCT more frequently detected RNFL defects than the Stratus OCT based on the quadrant sector at 5% (79.7% versus 63.8%, $P = 0.01$) and 1% abnormal levels (56.5% versus 40.6%, $P = 0.01$). Compared to the clock-hour sector of Stratus OCT, the sensitivity was significantly higher in the standard sector of Spectralis OCT at a 1% abnormal level (68.1% versus 39.1%, $P < 0.01$).

Conclusions: The diagnostic sensitivity in detecting glaucomatous RNFL defects based on the built-in normative database was higher using the Spectralis OCT parameters than using the Stratus OCT parameters.

EP-GLA-333

Comparison of surgical outcomes of modified 360-degree suture trabeculotomy ab-externo and conventional 120-degree trabeculotomy using metal trabeculotome in open angle glaucoma

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Purpose: To compare the long-term surgical outcomes of modified 360-degree suture trabeculotomy ab-externo and conventional 120-degree trabeculotomy using metal trabeculotome combined with deep sclerectomy in open angle glaucoma (OAG) with cataract.

Methods: This was a retrospective study comprised of 19 OAG patients (8 males and 11 females) including 5 with exfoliation syndrome. The mean age at the operation time was 76 ± 7 years. All patients underwent modified 360-degree suture trabeculotomy ab-externo, phacoemulsification (PEA), and intraocular lens (IOL) implantation (S-LOT) in one eye at Nagata Eye Clinic between March 2007 and December 2007. Ten of 19 patients underwent standard 120-degree trabeculotomy using metal trabeculotome, deep sclerectomy, PEA and IOL implantation (M-LOT) in the other eye. The pre- and postoperative IOP and the number of anti-glaucoma medications were compared between the two groups.

Results : The mean preoperative IOP was 20.9 ± 6.9 mmHg in the S-LOT group and 18.0 ± 7.1 mmHg in the M-LOT group. The mean number of preoperative anti-glaucoma medications was 2.1 ± 1.5 and 2.2 ± 1.2 , respectively. The mean postoperative IOP (S-LOT vs M-LOT) was 13.8 vs 13.4 mmHg at 1 year, 13.9 vs 13.1 mmHg at 3 years and 15.1 vs 14.0 mmHg at 5 years. The mean number of postoperative anti-glaucoma medications (S-LOT vs M-LOT) was 0.3 vs 0.3 at 1 year, 1.6 vs 0.3 at 3 years and 1.3 vs 0.5 at 5 years. There were no significant differences between the two groups regarding the pre- and postoperative IOP, the number of pre- and postoperative anti-glaucoma medications, the incidence of additional glaucoma surgery and the rate of survival after Kaplan-Meier when the point of death was set at 16 mmHg or 14 mmHg.

Conclusions: IOP was well-maintained for a long term after the surgery in both groups. Surgical outcomes after the two procedures were similar.

EP-GLA-334

Intraocular pressure measurement by goldmann applanation tonometry and dynamic contour tonometry - comparative study in glaucoma patients

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Purpose: The aim of this study is to compare the intraocular pressures (IOP) values measured by Goldmann Applanation Tonometry (GAT) versus Dynamic Contour Tonometry (DCT), in a group of patients diagnosed with glaucoma; we analyse, as well, how central corneal thickness (CCT) and other physical properties of the cornea can influence these values.

Methods: Observational prospective study of 34 eyes from 19 patients, followed in the Glaucoma Consultation, at our Hospital. No patient had a history of corneal pathology, surgery or ocular trauma. We evaluated: IOP by GAT and DCT (PASCAL dynamic contour tonometer); CCT measured by an optical pachymeter (Topcon SP-2000P) and the corneal curvature; the astigmatism; the axial length and the central depth of the anterior chamber measured by optical biometry (Carl Zeiss IOL Master). Finally, we analysed the IOP values obtained with each method and the respective influence of the CCT and the other biometric factors.

Results: The mean IOP measured by GAT was 16.97 ± 3.34 mmHg and by TCD was 18.24 ± 3.83 mmHg. The CCT mean value was 528.76 ± 27.07 μm . There was a strong positive correlation between the IOP values evaluated by GAT and DCT ($r = 0.71$, $p = 0.08$). The IOP values measured by GAT showed a strong positive correlation with the CCT ($r = 0.63$, $p = 0.04$), whereas no correlation was found between the IOP values measured DCT and the CCT ($r = 0.14$, $p = 0.30$). There was no correlation between the IOP value obtained by each one of the methods and: corneal curvature, astigmatism, axial length and central depth of the anterior chamber.

Conclusions: The results obtained in this study suggest that IOP measurements by GAT and DCT are concordant. On the other hand, the IOP values measured by GAT were significantly influenced by the CCT, whereas the ones measured by DCT seem to be CCT-independent. The IOP evaluated by each method was not apparently related to the other considered biometric structural factors.

EP-GLA-335

Predictors of intraocular pressure change after phacoemulsification for the treatment of primary angle-closure

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Purpose: To investigate intraocular pressure (IOP) change after phacoemulsification (PE) with intraocular lens implantation in eyes with primary angle closure (PAC) and primary angle-closure glaucoma (PACG) and its relation to clinical and anatomical anterior segment parameters.

Method: In this prospective study, visual acuity, IOP and biometric parameters were measured by noncontact optical biometer and anterior segment optical coherence tomography preoperatively and 6 months after surgery. Percentage of IOP change and its relation to biometric parameters, including aqueous depth (AQD), lens thickness (LT), axial length (AL) and angle parameters including Schwalbe line-angle opening distance (SL-AOD) and

Schwalbe line-trabecular-iris space area (SL-TISA) were evaluated.

Results: 37 eyes with PACG and 17 eyes with PAC were included in the study. The mean (SD) patient age was 69.3 (10.7) years; thirty-three (61.1%) were women. The mean IOP [mmHg] changed from 20.0 (8.3) preoperatively to 13.3 (2.2) at 6 months with a mean reduction of -6.7 (95% CI -9.2 to -4.1; $P < 0.001$). The mean number of IOP-lowering drugs decreased from 1.4 (1.4) to 0.9 (1.3) ($P < 0.001$). Uncorrected visual acuity (UCVA) increased significantly. The means of SL-AOD [mm] and SL-TISA [mm²] increased significantly from 0.174 (0.143) to 0.524 (0.251) and, from 0.08 (0.13) to 0.19 (0.09) respectively. The average AQD [mm] increased from 2.05 (0.3) preoperatively to 3.5 (0.4) 6 months after surgery ($p < 0.001$). In the multivariate regression model, preoperative IOP ($B = 0.8$, $p < 0.001$) and LT ($B = -2.78$, $p < 0.031$) were significantly associated with the change in IOP.

Conclusion: In our sample of patients, PE resulted in IOP and IOP-lowering drugs reduction with improvements in UCVA, AQD and, anterior chamber angle parameters. Preoperative IOP was the strongest predictor of IOP change. LT was found to be negatively associated with the IOP reduction after PE.

EP-GLA-336

Trends in utilization of ancillary glaucoma tests for patients with open angle glaucoma in two regional Hong Kong hospitals from 1997 to 2015

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Purpose: To assess trends in the use of ancillary diagnostic tests in evaluating patients with primary open-angle glaucoma (POAG) over the past 18 years in Hong Kong.

Method: A retrospective longitudinal cohort analysis of 130 cases of POAG seen between 1997 and 2015 in two regional hospitals that provide ophthalmic services to over 800,000 residents in Hong Kong. Trends analysis in visual field (VF), fundus photography (FP), central corneal thickness (CCT), and optical coherence tomography of the retinal nerve fiber layer (OCT) were performed. The proportion of patients receiving these tests were compared over 3 time periods, namely from 1997-2005 (T1), 2006-2010 (T2), and 2011-2015 (T3). Repeated measures logistic regression was also performed to identify differences in the odds of undergoing these procedures in each period.

Results: Within the first 6 months of diagnosis, there was a significant increase in the proportion of patients receiving OCT [23.5% in T1; 41.9% in T2; 71.4% in T3], FP [12.5%; T1 vs. 34.9% in T2; 63.5% in T3], and CCT [29% in T1; 53.5% in T2; 70.3% in T3]. There was also a significant increase in the proportion of patients receiving all 3 investigations [5.9% in T1; 18.6% in T2; 42.2% in T3]. The frequency of VFs performed significantly increased with time as well, with mean frequency of 0.81 ± 0.42 , 0.91 ± 0.27 , and 1.46 ± 0.65 VFs/ year in T1, T2, and T3 respectively. The odds of undergoing FP, OCT and VF increased by 312%, 74%, and 133% from T1 to T2, respectively, and by 213% (p -value = 0.008), 279% (p -value = 0.003), and 81% from T2 to T3, respectively.

Conclusion: During 1997 - 2015, the use of POAG ancillary testing rose dramatically. This finding not only represents the increasing awareness in documenting glaucoma severity objectively, it also reflects efforts in increasing resources to raise the standards of glaucoma care in Hong Kong's public health care system.

EP-GLA-337

Isolated ectopia lentis and pupillae and ocular hypertension: management and evolution: a case report

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Purpose: To describe a rare case of ectopia lentis and pupillae complicated to ocular hypertension.

Method: Case report.

Results: We describe the case of 43-year-old female with history of blurred vision. Ophthalmic examination noted the presence of isolated congenital bilateral ectopia lentis and pupillae, cataract, and ocular hypertension in both eyes. Outcome is good initially with medical treatment and lastly after cataract surgery.

Conclusion: In contrast with the other congenital syndromes, good prognosis may be noted after simple management of ocular hypertension in isolated ectopia lentis and pupillae.

EP-GLA-338

Analysis of the structural changes of lamellar capillaries in glaucoma using OCT angiography

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Purpose: To investigate the structural changes of lamellar capillaries in glaucoma using optical coherence tomography angiography (OCTA).

Methods: Twenty-one glaucomatous eyes in 15 patients (average age of 73.0 years, average MD of 14.0 dB) and 21 non-glaucomatous eyes in 14 patients (average age of 68.0 years, average MD of 0.54 dB) were included in the study. Enhanced-depth imaging OCTA images were developed by capturing the 3 mm x 3 mm areas of optic disc using SD-OCT (RS3000 Advance ®) from Nidek. Using the intensity images obtained at the same time, we identified the lamina cribrosa and defined the lamellar capillaries from the OCT signal at the same location. After binarizing both lamellar beam signals on the temporal side of optic disc and lamina capillary signals, they were superimposed to calculate the concordance rates using Wilcoxon rank sum tests.

Results: Capillary signals matched lamellar beam signals in normal eyes, but lamellar capillary signals were weaker even when the lamellar beam was maintained in glaucomatous eyes. The median rate of lamellar beam signal area to the temporal side of optic disc signal was 40.9 % in glaucomatous eyes whereas the rate was 37.4 % in the control eyes, and there was no significant difference ($p = 0.324$). However, the median rate of lamellar beam signal area to the lamellar capillaries on the temporal side of optic disc signal was 14.2 % in the glaucomatous eyes whereas the rate was 15.6 % in control eyes, and the rate was significantly smaller in glaucomatous eyes ($p = 0.038$).

Conclusions: We were able to detect decreased areas of lamellar capillaries in glaucomatous eyes. Our results suggest the possibility of missing capillaries in lamina cribrosa in glaucomatous eyes even when the lamellar beam appear to be maintained.

EP-GLA-339

Systemic steroid therapy influence on intraocular pressure in systemic lupus erythematosus (SLE) patients

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Purpose: This study aimed to evaluate the incidence of increased intraocular pressure and glaucomatous lesions in SLE patients treated with systemic steroids.

Methods: 62 women with SLE were divided into two groups treated (n=47, 94 eyes) and not treated (n=15, 30 eyes) with systemic steroids (sGS; wGS). Visual acuity and intraocular pressure (IOP) with ocular pulsatile pressure (OPA) measurements as well as scanning laser polarimetry (GDx), spectral domain optic coherent tomography (SD-OCT) of the optic disk and the macular region with ganglion cell analysis (GCA) were performed. The $p < 0.05$ values were considered statistically significant.

Results: Mean IOP and OPA reached the values of 17.14 mmHg (± 3.94)/3.16 \pm 1.24 and 17.65 mmHg (± 3.99)/2.91 \pm 1.21 for both eyes in sGCs and comparably 16.86 (± 3.45) mmHg /2.81 \pm 1.23 and 16.67 (± 3.50) mmHg /2.47 \pm 1.2 in the wGCs ($p > 0.05$) patients. In optic disk SD-OCT no statistical differences were observed for RNFL thickness, RNFL symmetry, cupping volume and the c/d ratio. No statistical differences were also observed for the mean and minimal GCL+IPL complex thickness measured in macular SD-OCT or NFI in GDx.

Conclusions: Research outcomes show no relationship between systemic steroid therapy and IOP level or glaucomatous damage of visual nerve fibers in SLE.

EP-GLA-340

A comparison of long-term outcome of trabecular microbypass stent with phacoemulsification in patients with early versus advanced open-angle glaucoma

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Purpose: To study the effect of combined cataract surgery and iStent (trabecular microbypass stent) implantation on intraocular pressure (IOP) and medication use in open-angle glaucoma (OAG) in patients with mild-to-moderate disease ($MD < 12$) versus advanced and severely advanced disease as defined by pre-operative mean deviation ($MD > 12$).

Method: This retrospective observational study included 43 eyes from 36 patients with OAG that underwent iStent implantation and cataract surgery between Mar 2013 and Feb 2016. Success was defined as IOP reduction of 20%, and/or reduction of glaucoma medication by one. Failure is defined as IOP increase of 15mmHg above baseline, or further pressure-lowering surgeries performed.

Results: The mean preoperative IOP was 20.34 \pm 3.56 mmHg ($P < 0.00458$). Patients were followed up for 3 to 36 month (median 24 month). 12 patients (27.9%) had advanced or severely advanced glaucoma. The mean number of glaucoma medications was 2.54 \pm 0.85 preoperatively and 2.11 \pm 1.14 ($P < 0.002196$) at last follow-up. At 1 day postoperatively, no eyes experienced an IOP increase of 15 mmHg above their baseline IOP. At 2 year follow-up, IOP reduction is maintained at -4.46 \pm 1.34mmHg ($P < 0.0001$). 36 patients

(83.7%) achieved treatment success at final follow up. Six patients (14.0%) required additional surgical interventions (1 cyclodiode laser, 1 Xen implant 2 selective laser trabeculoplasties, and 2 trabeculectomies) qualifying as treatment failure. mean IOP reduction was -5.58mmHg for patients with mild-to-moderate glaucoma, and -4.8mmHg for patients with advanced glaucoma.

Conclusion: The insertion of the iStent trabecular microbypass stent in combination with cataract surgery effectively lowers IOP in both early and advanced OAG over 2 year follow-up. Although medication use was not significantly reduced postoperatively, the safety profile appears favorable with a low rate of IOP spikes requiring additional surgery.

EP-GLA-341

A comparison of short term outcome of the AqueSys Xen Gel Stent with or without combined phacoemulsification cataract surgery in patients with open-angle glaucoma

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Purpose: To study the effect of the AqueSys Xen Gel Stent alone and in combination with phacoemulsification cataract surgery in open-angle glaucoma (OAG).

Method: This retrospective observational study included 21 eyes from 20 patients with OAG that underwent iStent implantation and cataract surgery between March 2013 and February 2016. Data included basic demographics, intraocular pressure (IOP), best-corrected visual acuity (BCVA, logMAR), intra-operative data and surgical complications.

Results: Patients were followed up for 2 to 6 month (median 3 month). 14 eyes (66.7%) underwent combined cataract surgery. 4 eyes (19.0%) had OHT, 13 eyes (61.9%) had mild to moderate glaucoma ($MD > 12$); and 4 eyes (19.0%) had advanced or severely advanced glaucoma ($MD < 12$). 15 eyes have had previous pressure-lowering interventions (6 cataract surgery, 5 selective laser trabeculoplasty, 1 cyclodiode laser, 1 combined cataract surgery with iStent). The mean preoperative IOP was 20.13 \pm 3.79 mmHg ($P < 0.0046$). The mean number of glaucoma medications was 2.68 \pm 0.80 preoperatively and 0.33 \pm 0.45 ($P < 0.00001$) at last follow-up. IOP reduction was -5.37 mmHg (26.7%) ($P < 0.0046$). Mean IOP reduction was -5.70mmHg (26.4%) from baseline 21.59mmHg for Xen implant alone. Mean IOP reduction was -5.11mmHg (26.9%) from baseline 19.03mmHg for combined Xen / cataract surgery. Four patients (19.0%) required needling or bleb revision.

Conclusion: The XEN gel stent offers a safe, effective and minimally-invasive way to lower IOP in open-angle glaucoma patients. Surgery demands experience in angle surgery, MMC use and post op bleb manipulation. Further follow-up data is required to determine long term surgical outcome.

EP-GLA-342


Morphological features of the trabecular meshwork in healthy subjects and patients with glaucoma

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Purpose: To assess histologically the trabecular meshwork (TM) structures in healthy subjects and patients with primary open-angle glaucoma.

Methods: After performed trabeculectomy, trabecular blocks (TBs) were obtained (30 cases). Ultrathin sections were examined using an electron microscope (Tecnaï Spirit BioTWIN TEM, The Netherlands). Histological changes of outflow routes were analyzed by comparing with control donor TMs (3 cases).

Results: TM was identified in 15 TBs (50%). Different degree pathological changes were determined. The tissues were categorized as 4 lesion types of the TM according to their ultrastructural changes. Endothelium loss was observed in all examined TM. Trabeculae partly covered by endothelium were observed in 6.7% only.

The core of trabeculae was filled with altered collagen structures or fibrous long-spacing collagen. The spaces between trabeculae were relatively small. Significant loss of endothelial cells was observed in the tissues of type 2 lesions (13.3%).

Only small their fragments overlaid the trabecular core and partly trabeculae were covered with thick basement membranes (BM). In 10% of the samples endothelial cells were observed disintegrated and the trabeculae was covered only with a thickened BM or in places even without it.

Such trabeculae may be sparsely distributed with clear spaces between them or may also be densely concentrated with no spaces. Formations of extremely dense collagen were observed in the core of trabeculae as well on the surface in 20% of samples.

Conclusions: Aqueous humor outflow in case of glaucoma via the TM is hindered by ultrastructural changes, such as disintegration of endothelial cells around trabeculae, thickening of the BM, infiltration of intra-trabecular spaces with remains of endothelial cells or the connective tissue as well as disappearance of spaces between trabeculae.

EP-GLA-343

Dealing with cataract in glaucoma patients

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Purpose: To present postoperative results after phacoemulsification on visual acuity and IOP regulation in glaucoma patients.

Methods: We have performed phacoemulsification in 32 glaucoma patients regulated with drops. In 17 patients previous trabeculectomy with 5fu was done and than phako surgery. In 21 patients we have operated phako and trabeculectomy in one act.

We had 20 mature cataracts, 7 white cataracts, 15 non mature and 28 incipient cataracts.

Results: The best VA and IOP regulation was achieved in the group with previously performed trabeculectomy.(VA:0,3, IOP 16mmHg).In the group where despite 3 drops the IOP was not regulated, after phako+trab operation we got good postop IOP regulation (18 mmHg).

In the group where IOP was regulated with one drops only, phakosurgery was

performed and we had the worse VA(o,1) and IOP (22mmH) regulation, so additional drops were necessary postoperatively.

Conclusion: The best results is achieved when trabeculectomy before or in the same time with phako is performed. In patients where only phako was performed the necessity of additional drops stay the same.

(Video 3 phako operations)

EP-GLA-344

Long-term efficacy and safety of preserved and preservative-free prostaglandins eyedrops. Final results of the FREE Survey

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Purpose: It has been shown that local intolerance is induced by preservatives, which along with lack of efficacy, is known to be one of the two main reasons for glaucoma treatment change. With new preservative-free (PF) prostaglandins (PG), the objective of the FREE survey (Follow-up of glaucoma patients treated with prostaglandins Eyedrops) was to evaluate the long-term efficacy of the PGs and improvement of ocular signs and symptoms after switching from preserved to PF glaucoma treatment.

Method: FREE is a prospective survey implemented in 5 European countries. 3 visits (inclusion, 6 and 12 months) were planned during routine visits. Hyperaemia and patient satisfaction with regard to tolerance were the main evaluation criteria. Secondary parameters were: mean intraocular pressure (IOP); patient global opinion about current glaucoma treatment; ocular surface disease (OSD); use of tear substitutes; ocular signs; fluorescein staining; and tear BUT.

Results: From the final analysis of 722 patients (France:463, Poland:98, Sweden:94, Netherlands:43 and Norway:24), IOP is still stable after 6 months (Mean=16.7±1.64 mm Hg n=711 eyes) and after 12 months (Mean=16.8±1.83 mm Hg n=361 eyes) of treatment with PF latanoprost (Monoprost®). There is no significant difference with preserved PG. At inclusion visit, 88.6% of patients treated with PF latanoprost were satisfied regarding tolerance compared to only 65.3% of patients treated with a preserved treatment. Conjunctival hyperaemia was shown to be less prevalent in patients treated with PF latanoprost than with preserved treatment (adjusted p-value=0.0015) at inclusion visit and 6 months later. At 6 months, the use of artificial tears had decreased for 49.5% of patients after switching to PF latanoprost.

Conclusion: These results confirm the clinical benefits of switching from a preserved PG to PF latanoprost (Monoprost®), as it gives better tolerability, patient satisfaction and quality of life whilst retaining efficacy.

EP-GLA-345

The treatment of primary open angle glaucoma patients with the combined laser trabeculoplasty

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Purpose: The purpose of present work was to study the data of investigations of selective laser trabeculoplasty (SLT) - 532 nanometers and YAG-laser activation of trabecula (YAG-LAT) - 1064 nanometers application in treatment of primary open angle glaucoma (POAG) patients I-II stages.

Method: 193 patients - 109 males and 84 females (291 eyes) at the age from 41 to 85 years with POAG were under medical observation. The unstable course of glaucoma diagnosed for all patients with using local hypotensive therapy before carrying out a trabeculoplasty. Supervision period was more than 36 months.

Selective laser trabeculoplasty was performed on Nd: YAG Laser Selecta Duos (Lumenis) (underwent 100 laser applications in all segments of corneal-scleral trabecula - 360°).

It wasn't received positive result after SLT in some cases (patients with the POAG not pigmented forms). YAG-LAT was applied to these patients (50 applications in inferior segment of corneal-scleral trabecula - 180°).

Patients with absence of effect were directed to surgical treatment.

Results: Statistically significant decrease of intraocular pressure (IOP) after SLT was noted in 237 cases (81,8%) for 4,6 mm Hg from initial data. YAG-LAT was performed after SLT in 54 cases (18,2%). Decrease of IOP after YAG-LAT was noted in 39 cases (72,2%) for 3,4 mm Hg from initial data.

Conclusion: The combined laser trabeculoplasty is safe and effective method of reducing IOP in patients with POAG I-II stages. The YAG-LAT additional application decreases of IOP in patients with not pigmented forms of POAG I-II stages.

EP-GLA-346

Awareness and knowledge about glaucoma: a population-based survey

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Purpose: a population based studies, to assess the awareness and knowledge level about glaucoma in Jeddah

Method: A large-scale survey was conducted among attendees of the International Glaucoma Day in the years 2015 and 2016 in Jeddah. A structured questionnaire assessed awareness about glaucoma and knowledge regarding the most significant risk factors, symptoms, treatment options and outcomes.

Personal history of glaucoma was investigated and knowledge of participants with glaucoma was compared with the rest of the population.

Results: We included 1710 participants, 828 (51.9% females, 52.9% Saudi, mean±SD age=40.25±14.39 years) in 2015 and 882 (45.1% females, 55.7% Saudi, mean±SD age=39.90±13.41 years) in 2016. Most participants were employed (65.2%) and of high educational level (university or plus; 61.1%). There were 3.6% and 3.7% participants who declared being affected with glaucoma in 2015 and 2016 respectively (p=0.168). Overall awareness rate

was 65.4% (69.7% in 2015 and 61.3% in 2016; p-value=0.001), corresponding to the percentage of participants who declared knowing what glaucoma is. Among these participants, 19.4% had fair or good knowledge; while 40.8% had average and 39.9% had very poor or poor knowledge; with higher proportion of fair to good knowledge among participants from 2016 campaign (p=0.0001).

Assessment of glaucoma-specific knowledge among participants with fair or good knowledge showed weaknesses in the following items: eye-drops as treatment option (correctness rate=34.0%); laser as treatment option (52.6%) and necessity for lifetime treatment (53.0%).

Conclusion: Although the studied population had sufficient awareness about glaucoma, a weak knowledge is observed about related risk factors, symptoms and treatment options. Knowledge about glaucoma should be promoted among general population for early detection and treatment.

EP-GLA-347

Episcleral venous pressure level in inferior nasal and inferior temporal quadrants

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Purpose: To evaluate episcleral venous pressure (EVP) in inferior temporal and inferior nasal quadrants in patients of different age.

Method: 500 eyes were evaluated in the prospective study. 460 eyes of 230 patients older than 50 years (73,9± 7,1) and 80 eyes of 40 patients under 30 years (21,3±1,8) were enrolled. Groups were equal in gender distribution. EVP was measured non-invasively using episcleral venomanometer EV-320 (Eyeteck, Morton Grove, IL). Level of EVP was recorded at baseline in partial compression of investigated vein and then in its total compression. Statistical analysis was performed using SPSS Statistics v20.0 program.

Results: To assess the EVP we measured EVP in partial and total compression of episcleral veins in 2 lower quadrants: nasal and temporal.

In older age group EVP level is significantly higher in both quadrants than in younger group (partial vein compression EVP in inferior nasal quadrant: 7,36±2,28 mmHg and 5,88±1,49 mmHg, p= 0,0005; partial vein compression EVP in inferior temporal quadrant: 8,0±2,36 mmHg and 6,41±1,44 mmHg, p=0,0003; total vein compression EVP in inferior nasal quadrant: 14,0±3,29 mmHg and 10,91±2,34 mmHg, p< 0,0001; total vein compression EVP in inferior temporal quadrant: 15,1±3,31 mmHg and 11,00±2,16 mmHg, p< 0,0001).

Conclusion: EVP in the inferior temporal quadrant in all groups was slightly higher, than EVP in the inferior nasal quadrant. EVP is an important determinant of intraocular pressure (IOP), but its role in IOP modulating remain still unclear.

According to our data, the EVP depends on age and perhaps on caliber of vessels, which seems to be different in temporal and nasal quadrants.

EP-GLA-348

Verification of the variational Bayes linear regression*Murata H., Asaoka R.**The University of Tokyo, Tokyo, Japan*

Purpose: To verify variational Bayes linear regression (VB-LR: IOVS 2014) trained with the data from University of Tokyo hospital (TOKYO), using external dataset.

Methods: The TOKYO data included 7070 eyes of 4166 patients: institutional data including all of VFs >five times, the external data included 177 eyes of 177 patients. All patients in external one underwent >10 VF tests, excluding the first VFs. Prior distribution in the VB-LR was computed using TOKYO data. Using external dataset, TD values of the 11th VF were predicted using TD values of 52 test points from the second to the tenth VFs (VF2-10) in each eye. The same procedure was iterated using different series of VFs: VF2-2 to VF2-9.

The prediction performance was calculated through the root mean squared error (RMSE). RMSE was also calculated using the ordinary least squared linear regression (OLSLR).

Results: RMSEs (mean \pm SD) were 4.9 \pm 2.7, 4.7 \pm 2.5, 4.5 \pm 2.4, 4.3 \pm 2.3, 4.1 \pm 2.1, 4.1 \pm 2.1, 3.9 \pm 1.9, 3.8 \pm 1.8, and 3.6 \pm 1.7 at VF2-2 to VF2-10, respectively.

OLSLR resulted in significantly larger RMSEs than OLSLR (RMSE: 3.9 - 19.4) at all VF series.

Conclusion: VB-LR is associated with similar levels of RMSEs with the data from external dataset.

EP-GLA-349

FAST questionnaire: a new simple and effective tool for fast assessment of ocular surface disease in all glaucoma patients*Antón A.¹, Baudouin C.²**¹Institut Catala de Retina, Ophthalmology-Glaucoma, Barcelona, Spain, ²CHNO des Quinze-Vingts, Ophthalmology, Paris, France*

Purpose: The prevalence of Ocular Surface Disease (OSD) is greater in glaucoma patients and assessment should be systematically done as quality of life can be affected, decreasing compliance and therefore progressing visual loss. In order to combat underdiagnosis and the poor management due to constraints, this study reports on the implementation of a new, rapid assessment method, the FAST questionnaire, for OSD evaluation in all glaucoma patients.

Method: FAST includes 14 questions on risk factors, symptoms and signs of OSD, highlighting abnormal results. The questionnaire is divided into two parts: data from the patient interview (demography, risk factors and symptoms) and from the clinical examination. This project involves 7 countries with the objective to examine correlations between risk factors, symptoms and signs and to produce a shorter, validated questionnaire thanks to the Rash Analysis model.

Results: First results were obtained from 301 Spanish glaucoma patients (75% used preserved glaucoma treatments). At least one risk factor was observed in 64% of patients, and 65.4% presented \geq 1 symptom; 46% reported dry eye symptoms between instillations and 49% reported itching/irritation. 73.2% reported at least one ocular sign.

There was a significant association between both ocular signs/symptoms and the time since initial diagnosis (all $p < 0.001$), and between symptoms and number of preserved drops used per day ($p < 0.05$). Ocular redness and corneal staining were significantly linked to the number of preserved glaucoma drops used per day (all $p < 0.001$).

The number of preserved drops was significantly associated with corneal staining: odds ratios 1.82 [1.07-3.09].

Conclusion: These first results offer interesting insight into the prevalence of OSD and also highlight the simplicity of this tool to report symptoms and OSD. The final validated version of the FAST questionnaire will be a simple and effective method to help ophthalmologists in daily practice.

EP-GLA-350

Fixed combination Brinzolamide/Brimonidine versus Brimonidine 0.2% to prevent intraocular pressure elevation after neodymium: YAG laser posterior capsulotomy*Makri O., Kanakis M., Pallikari A., Tsaparoni F., Plotas P.,**Pharmakakis N., Georgakopoulos C.**Medical School, University of Patras, Department of Ophthalmology, Patras, Greece*

Purpose: To compare the efficacy of a fixed Brinzolamide/Brimonidine combination with Brimonidine 0.2% in preventing intraocular pressure (IOP) elevations after neodymium: yttrium-aluminum-garnet (Nd:YAG) laser posterior capsulotomy.

Method: In this prospective, randomized, double masked clinical trial, patients scheduled to undergo Nd:YAG laser posterior capsulotomy for posterior capsule opacification were randomized in 3 groups. The Brimonidine group received 1 drop of Brimonidine 0.2%. The Brinzolamide/Brimonidine group received 1 drop of Brinzolamide 1%/Brimonidine 0.2% commercial preparation. The Control group received artificial tears. All groups received a single drop instillation, approximately one hour before Nd:YAG application. Intraocular pressure measurements were performed before treatment (baseline) and at the 1, 3, 24 hours and 1 week post treatment.

Results: Comparison between the 3 groups, revealed significant decrease of IOP at 1, 3, and 24h, at the two treatment groups compared to placebo. Pairwise comparison between the two treatment groups revealed that 3h after Nd:YAG laser Brinzolamide/Brimonidine fixed combination significantly reduced IOP compared to Brimonidine (-3.4 \pm 2.4 vs. -1.2 \pm 4.1 mmHg, $p=0.0024$). Although the incidence of IOP spikes did not differ significantly between the Brimonidine and Brinzolamide/Brimonidine groups, no patient under Brinzolamide/Brimonidine developed an IOP spike of >10 mmHg at any time point compared to 3 patients (8.6%) in the Brimonidine group.

Conclusion: Our results suggest that the Brinzolamide/Brimonidine fixed combination seems to be more advantageous than Brimonidine 0.2% monotherapy in preventing IOP elevation and possibly IOP spikes >10 mmHg following Nd:YAG capsulotomy.

EP-GLA-351

Comparison of two methods calculating vascular surface of filtering blebs*Wilkos-Kuc A., Kuna A., Wlaż A., Rozegnał-Madej A., Żarnowski T.**Medical University, Department of Diagnostics and Microsurgery of Glaucoma, Lublin, Poland*

Bleb failure most commonly results from excessive healing caused by fibroblast proliferation and subconjunctival fibrosis. During the first 2 days after surgery, the normal bleb is elevated and pale; its abundantly vascularized surface is always suggestive of poor prognosis.

Purpose: The aim of the study was to compare two methods of morphological analysis of vascular surface of the filtering bleb.

Method: Study involved 11 patients after trabeculectomy who developed early postoperative bleb failure, i.e. bleb congestion. Blebs were photographed on postoperative day 2, 2 weeks, 1,3 and 6 months after surgery. Based on images, complete morphological analysis of the bleb was carried out by the automated and manual method using Image J program (www.imagej.net).

Results: It was found that early postoperative bleb failure occurs when mean vascular surface exceeds 20% of the entire area. No statistically significant difference was found between the automated and manual method as for the mean vascular surface of the filtering bleb on **day 1** after surgery, 2 weeks, 1,3 and 6 months after surgery.

Conclusion: Both methods are equally effective and help calculate very similar data of vascular surface of filtering blebs. Clinical studies of pharmacological modification of bleb surface are ongoing.

EP-GLA-352

Distribution genotypes and alleles of polymorphic loci Pro72Arg (rs1042522) GENE TR53 in primary open-angle glaucoma and association with disease development in ukrainian population

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Purpose: The authors expressed the hypothesis according to which the influence of polymorphisms of codon 72 gene TR53 with primary open-angle glaucoma (POAG) is implemented by the "threshold" principle depending on sex and age, and the presence and severity of risk factors (degree of intraocular hypertension, hypoxia, activation oxygen lipid, local and systemic toxicity) manifests itself in varying degrees apoptic effect polymorphic allele G codon 72. In this regard, the Ukrainian population in 172 patients and 98 control individuals were first investigated the distribution of genotypes and polymorphism association Pro72Arg (rs1042522) gene TR53 with development of POAG.

Method: Analysis of polymorphic DNA loci was performed using a standardized test systems TaqMan Mutation Detection Assays Life-Technology (USA) automatically Thermocyclers Gene Amp® PCR System 7500 (Applied Biosystems, USA).

Results: It was established that the Ukrainian population of patients with POAG among genotype homozygous genotypes predominated Pro72Pro, who met 1.9 times more likely than controls ($p(F) = 0,042$). Arg72Arg genotype frequency decreased in 1.6 times ($p(F) = 0,006$). Pro72Arg polymorphism was associated with the development of POAG ($\chi^2 = 9,49$; $p(\chi^2) = 0,009$). The risk of POAG in Pro72Pro genotype carriers were more than twice as high (OR = 2,17; CI = 1,02-4,61) compared with the control. Polymorphism alleles also had an association with the development of POAG ($\chi^2 = 9,09$; $p(\chi^2) = 0,003$); availability 72Pro allele increased the risk (OR = 1,79; CI = 1,24-2,60). With stratification by gender and age was found that apoptic allele 72Arg a pathogenic role in the development of POAG aged up to 60 years for women and ancestral allele 72Pro - aged over 60 years for men.

Conclusion: For the first time in the Ukrainian population shows association, gender and age characteristics due polymorphism Pro72Arg (rs1042522) gene TR53 development of POAG.

EP-GLA-353

Analysis of genetic polymorphisms in operated primary open angle glaucoma patients in Latvian population

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Purpose: The aim of this study was to determine a possible association of several single nucleotide polymorphisms (SNPs), that were previously reported as candidate SNPs, with POAG in Latvian population.

Method: The study included 91 patients with POAG and 46 patients with cataract (as a control group) admitted to Pauls Stradins Clinical University Hospital, Department of Ophthalmology for surgery. Genomic DNA was obtained from human peripheral blood leucocytes. For genotyping, a real-time PCR with TaqMan SNP Genotyping Assay (Life Technologies, USA) was used. Genotypes were assigned using AutoCaller 1.1 (Applied Biosystems, USA) software. Statistical analysis was performed by the software IBM Statistics 20.0. In total, three SNPs were genotyped in all samples: SNP rs4656461 near the TMC01 gene, rs1063192 near the CDKN2B gene and rs10483727 near SIX1/SIX6 gene.

Results: The obtained results for all SNPs were in accordance to Hardy-Weinberg Equilibrium. Minor allele frequency (MAF) for all SNPs was similar with previous reports of allele and genotype frequency in white Europeans. For all three SNPs mutant allele frequency was similar for both groups (P value > 0.05). Further, MAF of the rs4656461 was compared between younger (50-74 years old) and older (75-88 years old) individuals for different POAG stages. The difference was statistically significant for the POAG stage III.

Conclusion: Overall, genotyping results for three SNPs studied were similar with previous reports of allele and genotype frequency in white Europeans. All three SNPs were not significantly associated with POAG in Latvian population. However, for one of the SNPs a statistically significant difference of MAF between different age groups was observed. Additional replication studies in larger cohorts and other populations are necessary to explore a relationship between SNPs with earlier age at diagnosis of glaucoma.

EP-GLA-354

A brief history of glaucoma surgery and future concepts

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Purpose: This paper analyses the main surgical glaucoma procedures since the first descriptions of this illness until the present time and expectations for the future.

Method: Our research describes the first surgical glaucoma treatment attempts and also the main current approaches: noninvasive (laser iridotomy, selective laser trabeculoplasty, laser iridoplasty), ab interno and ab externo minimally invasive procedures (cyclophotocoagulation, Trabectome, excimer laser trabeculotomy, iStents, Hydrus stent, suprachoroidal shunts, ab interno and ab externo canaloplasty, ab externo trabeculotomy, gonioscopy-assisted transluminal trabeculotomy) and penetrating (trabeculectomy and drainage

devices). In addition we propose a new minimally invasive glaucoma surgical approach: ab interno trabeculectomy using a vitreous cutter and a gonioscope, which substantially lowered the IOP during a 24 months follow-up period. A new concept of an improved device with cutting and aspiration functions that is optimized to fit into the anterior chamber angle and excise the trabecular meshwork would be better suited once created.

Results: The data on each surgical procedure is reviewed in this article comparing the advantages and disadvantages, the efficacy, the follow-up IOP and patient selection for each of these approaches.

Conclusion: This study allows choosing the best suited surgical procedure for every glaucoma patient.

EP-GLA-355

The influence of pharmacological mydriasis on the results of scanning laser polarimeter (GDx) in glaucoma diagnostic

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Purpose: To assess the influence of pharmacological mydriasis on modification of NFI (Nerve Fiber Index) estimating on GDx (Glaucoma Diagnostic x) analysis.

Method: The study included 51 patients (101 eyes) referred to the Ophthalmic Outpatient of University Clinical Center in Katowice. The analysis of NFI (Nerve Fiber Index) assessed during GDx examination were performed in patients with narrow pupil and compared to the test under pharmacological mydriasis conditions.

Results: Analysis of GDx parameter: NFI (Nerve Fiber Index) allows to assess the severity of the structural changes and to evaluate the progression of glaucoma. The analysis of obtained results was carried in StatSoft Statistica program. NFI of the patients under pharmacological mydriasis decreased on average 2,8 points. The statistical significant correlation between mydriasis procedure and decreasing the Nerve Fiber Index (NFI) was achieved (Wilcoxon test; $p < 0,05$).

Conclusion: The pharmacological mydriasis decreases NFI which could be caused by changeable conditions of translucent structures of the eye before and after the dilatation of the pupil. The obtained results can influence the diagnostic and management of patients with glaucoma.

EP-GLA-356

Evaluation of the effectiveness of stem cell therapy with use of adult multipotent neural crest-derived stem cells for modeled adrenal-induced glaucoma treatment

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The aim of a study was to assess the morphological changes of retina structure after modeled adrenal-induced glaucoma and treatment effect of the postnatal cultured multipotent neural crest-derived stem cells (NC-MSCs) delivered by different routes.

Glaucoma condition was made in *Wistar* rats (males, aged 10-12 months) by intraperitoneal injection of 0.18% solution of adrenaline tartrate in a dose ranged 10 to 15 µg per 100 g of body weight. There were 20 injections through 6 weeks. Measurement of intraocular pressure (IOP) was carried with use of applanation tonometer. Adult NC-MSCs were isolated from the bulge region of whisker follicle by explant methods. Adult NC-MSCs were expanded *in vitro* and then characterized by immunocytochemistry, flow cytometry and directed differentiation assay into NC-derived cell types. Cell transplantation modes: native NC-MSCs, *iv* (5×10^6); retro- and parabulbar injections of 0.5×10^6 native and committed NC-MSCs (CNTF treatment, 5 days). Retina and optic nerve histomorphometric analysis was done on H&E stained sections.

NC-MSCs have a phenotype of nestin⁺p75⁺Sox10⁺cytokeratin⁻. Following lineage commitment cells become GFAP⁺ with morphology of Muller glia precursor cells. IOP in rats before modeling was 7-8 mmHg. During the injection of AT the IOP was increased in all experimental animals from 15 to 20 mmHg. Adrenal-induced glaucoma 1 month after modeling led to the development of stable through 3 months glaucoma characteristic dystrophic changes. NC-MSCs transplantation induced positive changes for all cell delivery methods. Positive effect of the NC-MSCs administration was observed in terms of swelling regression, retina and optic nerve restoration. Retrobulbar mode had the most prominent effect on the recovery of ganglionic layer, restoration of the structure of inner and outer nuclear layers and layer of rods and cones. Further studies of mechanisms (trophic vs structural integration) involved in retina recovery should be done.

EP-GLA-357

The mobility of the oculomotor system and the lability of the visual analyzer in patients with primary open-angle glaucoma

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Purpose: comparative assessment of the mobility of the oculomotor system and the lability of the visual analyzer in patients with primary open-angle glaucoma (POAG) with II and III stage of the disease with compensated IOP.

Method: 38 patients with POAG were examined. 20 eyes had stage II and 18 eyes had stage III of the disease. Mobility of the oculomotor system was studied by the indexes of the frequency of the pulse displacement. Lability of the visual analyzer was evaluated by the index of critical frequency of the fusion

of flashes and index of critical frequency of the appearance of flashes be the use of our own elaborated photomyostimulation device. The device provides synchronous frequency of flashing and the frequency of movement of the light pulses of symmetrical LEDs for both eyes. The frequency range of the flashing pulses is from 4 to 50 Hz in all kinetic regimes. The range of frequency displacement pulses of a luminous object (PRF) in all three possible modes of 0.5 to 4 Hz. Discrete changes in the frequency of travel pulses is 0.5 Hz.

Results: Also in II and III stages of POAG functional mobility of the oculomotor system was significantly below normal data ($p < 0.05$). Thus in patients with III stage significantly lower than in II stage ($p < 0.05$). Functional lability of the visual analyzer in patients with POAG of II stage is not significantly different from the normal data. In stage III of POAG is observed significant decrease of functional lability of the visual analyzer in comparison with the normal data ($p < 0.01$) and with II stage of disease ($p < 0.05$).

Conclusion: The obtained data testify to necessity of search of methods of stimulation of functional mobility of the oculomotor system and the lability of the visual analyzer in patients with glaucoma, which can significantly improve the quality of life of patients.

EP-GLA-358

Surgically induced astigmatism following glaucoma surgery combined with cataract. Comparison of penetrating and nonpenetrating procedures

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Purpose: Assessment of astigmatism changes following penetrating glaucoma surgery (trabeculectomy, iridenclesis) and non-penetrating (nonpenetrating deep sclerectomy) combined with cataract extraction.

Method: It was a retrospective analysis of 37 patients (37 eyes) of whom 21 underwent penetrating glaucoma procedure and 16 subjects nonpenetrating, all combined with cataract. Before and 6 months postoperatively autorefractometry data was collected and then analysed. Arithmetic mean of astigmatism, spherocylindrical, mean astigmatism in form of centroid, shift of astigmatism (with the rule- WTR, against the rule- ATR, oblique), and surgically induced astigmatism (SIA) were calculated. The data was assessed for each group separately and then compared.

Results: Arithmetic mean of astigmatism before surgery for penetrating procedures was $0,84 \pm 0,51D$ and $0,98 \pm 0,73D$ for nonpenetrating. Six months postop it was $0,98 \pm 0,73D$ and $1,07 \pm 0,72D$ respectively. Centroid for penetrating surgery at day 0 was $0,13 D$ ax $150,8^\circ$ after 6 months $0,32 D$ ax 3° . Preoperatively it was oblique and postoperatively it shifted into ATR direction. In nonpenetrating procedures centroid was $0,21D$ ax $56,6^\circ$ and $0,4D$ ax $64,8^\circ$ after surgery. It was directed ATR pre and postop. SIA at 6 months was $1,24 \pm 0,74D$ for penetrating and $1,22 \pm 0,95D$ for nonpenetrating ($p=0,641$).

Conclusion: Both penetrating and nonpenetrating procedures combined with cataract extraction, induce comparable refractive changes (in form of arithmetic mean of cylinder and spherocylindrical) and SIA. No statistical differences were found in SIA and refraction for particular groups in analysed timeframe, as well as between the groups. Both procedures shift the astigmatism in ATR direction.

EP-GLA-359

High definition imaging in topiramate induced myopic shift and secondary acute angle closure glaucoma

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Purpose: To report a clinical case of topiramate-induced bilateral myopic shift and secondary angle closure glaucoma, show high definition imaging and discuss its management.

Method: Clinical case report. The investigation methods were photography of the anterior chamber, refraction, Spectral Domain-Optical Coherence Tomography (SD-OCT) and B-scan Ultrasonography.

Results: A 26-years old lady referred herself to the emergency eye clinic with bilateral blurred and sudden loss of vision. Past history revealed mixed connective tissue disease, low myopia and migraines on which she was started on topiramate medication by her family doctor two weeks prior to her presentation in the eye unit. Upon examination her visual acuity was counting fingers on both eyes. She was found to have acute myopia ($-5.00DS$ myopic shift), bilateral acute angle closure glaucoma (Photography and SD-OCT) resulting to high intraocular pressures (30mmHg) and bilateral cilio-choroidal effusions (B-scan) with forward shift of the lens (SD-OCT & Photography). Topiramate was stopped and treatment with oral acetazolamide, topical prostaglandin-analogue, cycloplegic and topical steroids were given. Five days later angle anatomy returned back to normal resulting in normal intraocular pressures and vision while effusion resolved.

Conclusion: Acute myopic shift with bilateral secondary angle closure glaucoma may develop following topiramate treatment. Anterior segment SD-OCT and B-scan Ultrasonography may detect early and monitor this adverse effect.

EP-GLA-360

The results of treatment of patients with primary open-angle glaucoma by the method of phosphene electrostimulation

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Purpose: To evaluate the effectiveness of the phosphene electrostimulation in the treatment of patients with compensated primary open-angle glaucoma (POAG) in II and III stages of the disease.

Method: Under supervision there were 26 patients (31 eyes) with compensated POAG. 16 eyes had the II stage of glaucoma. 15 eyes had III stage of glaucoma. Treatment consisted of 10 sessions of phosphene electrostimulation. Duration was 10 minutes. The current intensity was elected in each case individually, depending on the initial level of the threshold electrical sensitivity by phosphene. Treatment efficacy was assessed by changes in the level of threshold electrical sensitivity by phosphene, the critical frequency of the disappearance of flashing of phosphene in the 1.5 and 3 regime, and the level of changing of computer perimetry data.

Results: The use of phosphene electrostimulation in patients with POAG in II stage of the disease allowed to improve on 19.3% the light sensitivity of the retina according of computer perimetry data and to increase the threshold of electrical sensitivity of phosphene on 14.4%. In patients with III stage light sensitivity of the retina increased on 14.8%, threshold of electrical sensitivity

of phosphene increased on 15.2%, and the electrical lability of phosphene in regime of 1.5 and 3.0 on 13.5% and 12.1% respectively.

Conclusion: These results allows to recommend phosphene electrostimulation for the treatment of patients with POAG.

EP-GLA-361

Risk factors for primary open-angle glaucoma progression

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Purpose: To identify risk factors for primary open-angle glaucoma (POAG) progression.

Methods: A prospective study of 100 patients (200 eyes) with primary open-angle glaucoma was conducted between 2013 and 2015. The patients were divided into two groups, Group 1 (G1) made of 84 eyes with progression of POAG, and group 2 (G2) made of 116 eyes with no progression of POAG. Demographic, systemic, ocular, and therapeutic factors were compared between the two groups.

Results: Significant factors for glaucoma progression were low socioeconomic level ($p = 0.03$), initial visual acuity inferior to 20/63 ($p = 0.01$, OR = 5, 6), initial intraocular pressure (IOP) more than 25 mm Hg ($p = 0.01$, OR = 1.5), cup to disc ratio of more than 0.5 ($p = 0.001$, OR = 6.9), advanced glaucoma stage ($p = 0.02$), more than two topical medications ($p = 0.01$), corneal thickness less than 510 μ m ($p = 0.004$, OR = 4.2), pseudoexfoliation syndrome ($p = 0.0001$, OR = 4.8) and peripapillary atrophy ($p < 0.001$, OR = 2.2).

Conclusion: The most important factors that were associated with progression of POAG were cup to disc ratio of more than 0.5, corneal thickness of less than 510 μ m, and pseudoexfoliation syndrome.

EP-GLA-362

Positive effects of cataracta surgery on patients with chronic angular glaucoma

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Purpose: We noticed that a large number of patients diagnosed with chronic angular glaucoma after undergoing cataract surgery have had their IOP reduced and with existing antiglaucomatous therapy in place they have also achieved a stable hypotensive effect.

Our aim was therefore to analyse this hypotensive effect of cataract surgery in patients with chronic angular glaucoma.

Method: 14 patients who underwent a cataract surgery and who were also diagnosed with chronic angular glaucoma. The follow up time was from 2 to 16 months. All patients have had submitted a combination therapy of dorzolamide -timolol and latanoprost and had sustained laser iridotomies before surgery. Visual acuity ranged from light perception to 0.5 with a correction. IOP was between 21-27 mm Hg.

Results: Postoperative recovery of these patients as well as stabilization of their visual acuity was slightly longer than it was the case with patients who had been treated for cataract exclusively, and it took around 3 weeks on average. We did not have any choroidal detachment and shallow anterior chamber after operation, this being explained by the stability of anterior chamber induced by the presence of tree piece IOL. The hypotensive effect have been

achieved with 12 patients. In 4 cases after 3 to 4 months period we reduced hypotensive therapy, and in 2 cases due to limit values of IOP and goniosynechia we opted for the antiglaucomatous surgery.

Conclusion: Cataract surgery on patients with chronic angular glaucoma has many advantages over antiglaucomatous surgery or combined surgery, as there seem not to be any complications such as choroidal detachment or shallow anterior chamber, meanwhile a positive hypotensive effect is achieved. We believe that the surgery of choice in patients with cataract and chronic angular glaucoma.

EP-GLA-363

Visual field progression is associated with systemic concentration of macrophage chemoattractant protein-1 in normal-tension glaucoma

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Purpose: To investigate the associations between endothelin-1 (ET-1) and macrophage chemoattractant protein-1 (MCP-1) levels, and visual field (VF) progression in normal-tension glaucoma (NTG).

Methods: We conducted a prospective, longitudinal study in 71 patients with NTG. Blood samples from all subjects were assayed for ET-1 and MCP-1 concentrations and baseline ophthalmic examinations, including the VF, were performed. Baseline data were compared with follow-up data over 3 years.

Results: After 3 years of follow-up, 14 of the 71 patients showed VF progression, and the systemic MCP-1 level was significantly associated with VF progression ($r = 0.318$, $P = 0.007$).

Multiple regression analysis showed that VF progression was significantly associated with MCP-1 (odds ratio, OR = 1.021, 95% CI = 1.003-1.040; $P = 0.020$) and optical disc hemorrhage (ODH; OR = 1.573; 95% CI = 1.140-2.170; $P = 0.023$).

Conclusions: Systemic MCP-1 levels were associated with VF progression in patients with NTG.

EP-GLA-364

Swept-source OCT assessment of changes in anterior chamber depth, angle configuration and iris-trabecular contact after phacoemulsification in eyes with open or closed iridocorneal angles

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Purpose: The aim of the study was to compare the change in angle width and iris-trabecular contact area (ITC index parameter) using swept-source AS-OCT in open- or closed-angle eyes.

Methods: The study included 211 eyes divided into 4 groups according to AS-OCT findings and clinical data: POAG (n=63), normal open angle group (n=64), PACG (n=41) and PAC (n=43). Biometric factors such as: axial length (AL), lens thickness (LT), lens vault (LV), anterior chamber depth and width (ACD, ACW), angle parameters: AOD500, TISA500, ARA500 and TIA in 4 quadrants, ITC index were measured pre- and 6 months postoperatively.

Results: Eyes with closed angles had narrower angle according to Shaffer grading scale and AL, ACD, ACW and LV were smaller compared to open angle groups ($p < 0,001$). LT did not differ significantly between the groups. There was a strong negative correlation between preoperative ACD and LV (Pearson correlation $r = -0,885$ for open and $r = -0,629$ for closed angle eyes). After cataract surgery the ACD deepened significantly in both groups ($p < 0,001$) and the ACD change was greater in closed-angle groups (mean difference 0.32 mm, $p < 0,001$). The mean values of all angle parameters were significantly smaller in closed-angle group before and also after surgery ($p < 0,001$). They increased in all eyes ($p < 0,05$) but did not differ significantly between the groups. ITC index before and after surgery was 78,2% and 19,7% in PCAG respectively ($p < 0,001$) and 64,9% and 4,5% in PCA respectively ($p < 0,001$).

Conclusions: Postoperative ACD change significantly differed between the closed- and open-angle eyes. The cataract surgery leads to open and widen the irido-corneal angle in a similar range when compared between closed- and open-angle groups, thus the angle remains narrower in primary closed-angle eyes, ITC index in a swept-source AS-OCT is a useful tool for the quantitative evaluation of angle closure area before and after cataract surgery.

EP-GLA-365

Factors predicting intraocular pressure drop after phacoemulsification with intraocular lens implantation in open- and closed-angles eyes

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Purpose: It is well known that uncomplicated cataract phacoemulsification has an IOP-lowering effect in both open- and closed-angles eyes. However, the magnitude and clinical significance of this change continues to be debated. Several predictors have been identified with lowering IOP. The study is an attempt to find answer whether it is possible to predict the range of the IOP drop based on preoperative biometric data and IOP.

Method: The study included 211 eyes divided into 4 groups according to swept source AS-OCT findings and clinical data: POAG ($n=63$), normal open angle group ($n=64$), PACG ($n=41$) and PAC ($n=43$). The IOP was assessed before and 1 day, 2 and 4 weeks, 6, 12 and 36 months after surgery

Results: After surgery the mean IOP decreased significantly in all groups ($p < 0,001$). A mean IOP reduction was 2.9 mmHg for POAG (19,5%) and PCAG (19,0%), 2.2 mmHg (16%) for open nonglaucomatous and 3.0 mmHg (20,8%) for PAC. The mean postoperative reduction was not significantly different between eyes with closed- and open-angles ($p > 0,05$), however, the trend was for greater change in closed-angle groups (3.0 vs 2.0 mmHg). Multivariate linear mixed regression model was used to predict IOP reduction and assess any interaction of IOP change with the ocular parameters (AL, ACD, ACW, LT, LV, AOD500, ARA500, TISA500, TIA) and preoperative IOP. The prediction models revealed that preoperative IOP is a main significant predictor of IOP reduction and predicted IOP reduction range is 1.0-2.0 mmHg in POAG, 2.0-3.0 in nonglaucomatous open-angle eyes and 3.0-4.0 mmHg in closed-angle eyes (both PCAG and PAC).

Conclusions: The degree of IOP reduction is comparable in POAG and PCAG eyes and eyes without glaucoma, with a tendency to a larger decline in the eyes of the initially closed-angle. The most important factor contributing to the expected degree of IOP reduction after cataract phacoemulsification is the preoperative IOP.

EP-GLA-366

Parafoveal cone density in patients with glaucoma using adaptive optics scanning laser ophthalmoscopy

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Purpose: To determine whether parafoveal cone density in patients with glaucoma differ according to localization in 4 quadrants of the retina using adaptive optics scanning laser ophthalmoscopy (AOSLO).

Method: Using AOSLO we examined retinas of both eyes in 71 patients with diagnosed glaucoma, aged 28 to 90 years old. Mean axial length for the right eye (R) was 23,51mm and for the left eye (L) was 23,48mm. We analysed images at 3 degrees parafoveal for each of the four primary retinal meridians: superior (S), inferior (I), nasal (N) and temporal (T). The cone density was measured using software provided by the producer of AOSLO camera (AOdetect software v0.1, Imagine Eyes, Orsay, France). In statistical analysis of the results a P value of $< 0,05$ was considered significant.

Results: There were no significant differences in mean cone density (DM) between R and L eyes ($p=0,857$). The highest DM was observed in inferior quadrants (R: 17486 +/- 5423 cells/ mm² and L: 17072 +/- 6273 cells/ mm²), the lowest DM in temporal quadrant for the right eye (15364 +/- 6980 cells/ mm²) and nasal quadrant for the left eye (15193 +/- 6371 cells/ mm²). However, the differences in DM for different quadrants were not statistically significant ($p > 0,05$).

Conclusion: In our study there were no statistically significant differences in cone density according to localisation in 4 quadrants of the parafoveal retina of patients with glaucoma.

EP-GLA-367

Oh bubbles! When the flap is a flop

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Purpose: We present a unusual case of maculopathy hypotonic post-trabeculectomy and its unusual treatment.

Method: Patient, male, 22 years with juvenile glaucom underwent a trabeculectomy with mitomycin C (0.04%) of the right eye (OD). The immediate postoperative period showed a fine filtration bubble with hypotonia refractory to conservative measures, with subsequent hypotonic maculopathy. It was performed a surgical revision with 2 additional suture in the scleral flap and conjunctival graft, with a satisfactory result and resolution of hypotonic maculopathy. In the early postoperative period, there was a history of mild blunt ocular trauma without further repercussions. After two years the patient had low visual acuity (VA) of the OD, fine and avascular bubble with seidel and visualization of the underlying uveal tissue, 5 mmHg of IOP and chorioretinal folds. A new revision of the trabeculectomy was performed. During the procedure, it was not possible to identify the scleral flap. The fistula was closed with tutopatch® graft.

Results: A good clinical evolution occurred. After 5 months, IOP was 15mmHg, without seidel or changes in the fundus and AV was 20/20.

Conclusion: There are few reports of scleral melting after trabeculectomy. However trauma and scleral necrosis associated with mitomycin are listed as the main causes. A patch of collagenous membrane derived from bovine pericardium above the fistula seems an adequate therapy to treat a scleral flap melting and a secondary over-filtering bubble.

EP-GLA-368

Angle closure glaucoma in young patients with Goldmann-Favre syndrome: a report of 4 cases

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Purpose: To report four patients (7 eyes) with Goldmann-Favre syndrome who developed angle closure glaucoma.

Methods: Four case reports.

Results: The patients were aged between 24 and 34 years (three female patients and one male patient). The initial visual acuity varied between no light perception and 20/32. Slit-lamp examination showed shallow anterior chambers in 7 eyes with extensive peripheral anterior synechiae on gonioscopy. The intraocular pressure at presentation ranged between 23 and 36 mmHg and optic disc cupping between 0.6 and 1. On the other hand, there were ophthalmological features which were consistent with Goldmann-Favre Syndrome. Laser iridotomy and topical anti-glaucoma medications failed to control the intra-ocular pressure. Trabeculectomy was performed in 7 eyes.

Conclusion: Angle closure glaucoma may be associated with Goldmann-Favre Syndrome. The pathophysiology remains not clear.

EP-GLA-369

Evaluation of the histone deacetylase activation in injured retina and sclera

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Purpose: Acetylation and deacetylation of histones, carried out by histone acetyltransferases and histone deacetylases (HDACs), respectively, affects cellular division, differentiation, death and survival. We investigated the role of protein acetylation of the retina and sclera after chronic intraocular pressure (IOP) elevation.

Method: We used a rat ocular hypertension glaucoma model induced by episcleral vein cauterization and investigated the changes of acetylation and its structure in the retina and sclera. Western blot analysis and fluorescence immuno-staining were used for determination of HDACs and histone H4 acetylation at various time points after moderate IOP elevation.

Results: IOP remained elevated in the cauterized eyes for the 8-week experiment, whereas it was not elevated in the contralateral control eyes. The average number of RGCs decreased significantly, and TUNEL-positive cells were detected in the ganglion cell layer (GCL). HDAC2 and HDAC3, increased throughout the retinal layer after IOP elevation. HDAC2, HDAC3, and histone acetyl H4 after IOP elevation was expressed in GCL, inner nuclear layer.

Conclusion: HDAC 2 and HDAC3 was elevated in chronic ocular hypertensive retina and causally related to their death, suggesting HDAC inhibition as a novel approach for neuroprotection in retinal degeneration. The role of this phenomenon needs further investigation.

EP-GLA-370

Inner retinal change in normal-tension glaucoma

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Purpose: Normal-tension glaucoma (NTG) is known as an optic neuropathy characterized by progressive retinal ganglion cell death and glaucomatous visual field loss. NTG is reported to be related with systemic hemodynamic factors, such as fluctuating blood pressure and systemic hypotension. However, the mechanism how these factors contribute to glaucomatous damage at the optic nerve head and retina is unknown. In this study, we investigated the role of cell death mechanism of the retina in NTG.

Method: NTG induced to have systemic hypotension. Apoptosis of RGCs were examined by Terminal deoxynucleotidyl transferase-mediated dUTP nick-end labeling (TUNEL).

Expression of various markers related to RGC apoptosis and glial cell activation were analyzed by western blot analysis and immunohistochemical staining of the retina.

Results: IOP elevation is not detected. We have analyzed the loss of Brn3a-positive RGCs and TUNEL-positive cells were detected in the ganglion cell layer. Expression of glial fibrillary acidic protein was increased throughout the retinal layer.

Conclusion: These findings suggest that systemic hemodynamic factors may contribute to the changes of astrocyte and muller cells in retina cell death without elevated IOP. The role of this phenomenon needs further investigation.

EP-GLA-371

Plastic valve positioning in a patient with ocular periphoid cicatrized

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Introduction: The ocular cicatrized pemphigoid is an autoimmune entity. In cases where it is associated with glaucoma, it is necessary to decrease the instillation of topical antiglaucomatous eye drops increasing the incidence of filtering surgery, having the same, an unfavorable prognosis due to the high rates of scarring of the filtration ampoule.

Purpose: To describe the surgical technique performed in a patient with glaucoma: vitrectomy with placement of a Pars Plana Ahmed Glaucoma Valve Implantation.

Material and method: 63 year-old patient with ocular cicatrized pemphigoid diagnosed by biopsy. The patient resents open-angle glaucoma, trabeculectomized twice, with treatment failure. Control is performed with systemic and topical immunosuppressors prior to the procedure. Ophthalmologic evaluation: VA: counts fingers 1 mts, with no correction. BMC: corneal decompensation, relative afferent pupillary defect, scleromalacia at hour 11 to hour 2, pseudofauces. PIO: 45.

Results: vitrectomy is performed with 25 g and the placement of a Pars Plana Ahmed Valve in inferior nasal region. Description of the surgical procedure:

A) Vitrectomy with entry by 25 g;

B) conjunctival and tenon divulsion, orbital spatula is placed for valvular pocket enlargement;

C) purging valve with syringe and needle 27 G. placing the valvular plate to 8 mm of limbus. Valve implant is sutured and the valve tube inlet distance measured with 3.5 mm limbs;

D) cut the valve tube with a posterior bevel, puncture the vitreous cavity and place a 6mm tube into the cavity; E) closes conjunctiva.

Conclusion: Vitrectomy with placement of Pars Plana Ahmed Valve is an effective surgical alternative for the resolution in case of decompensated glaucoma and pemphigoid.

EP-GLA-372

Hypoperfusion of central artery of the retina

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Introduction: Elevated intraocular pressure is the most important risk factor involved in the pathophysiology of glaucoma. However, there is increasing evidence that vascular factors may be associated: systemic hypertension and diabetes; and vascular ocular factors such as ocular blood flow and ocular perfusion pressure

Purpose: To evaluate an 87-year-old patients whether their glaucoma's torporous evolution is related to the control of their ocular pressures or to concomitant vascular factors.

Methods: an 87-year-old patient in follow-up and treatment for glaucoma for 2 years. Despite the treatment, there is deterioration of the visual field with paramacular scotomas.

Results: Treated with travoprost and timolol. VA 6/10, biomicroscopy: pseudophakia both eyes, Pachymetry: Re: 541 um Le: 543 um

Daily pressure curve: 8:30 hs 12/13 mmhg 12:00hs 12/12 mmhg, 15hs: 11/12 mmhg, 18:00 12/12mmhg. An increase in the resistance of the posterior and central ciliary arteries of the retina of both eyes is detected in eco Doppler, with loss of elasticity of the retinal circulation by microangiopathy findings suggesting hypoperfusion of both optic nerves.

Conclusions: when we are dealing with controlled glaucoma in relation to his/her IOP, which presents deterioration of the visual field, vascular pathology should be taken into consideration. Studies such as the eco Doppler of neck vessels, central retinal artery and posterior ciliary vessels can be a great diagnostic tool. Treatment with neuroprotective agents may be a way to prevent the torpid evolution of these patients. Controlled studies are required with a large number of patients to evaluate the role of central artery hypoperfusion of the retina in the evolution of torpid glaucoma.

EP-GLA-373

Bleb conjunctival compression sutures: a surgical alternative for cases of hypotonia due to hyperfiltration blebs

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Introduction: Surgery filtering glaucoma is far from exempt of complications. Post op requires rigorous monitoring to detect these complications in time. A hyperfiltrating bleb is less-frequent problem to encounter, usually associated with Hypotony Maculopathy. The effect is characterized by a decrease in the visual precision, caused by macular folds, retinal edemas, papilledema and vascular curvature. It is for this reason that it is of utmost importance to develop a surgical technique to resolve the issue without drying the bleb.

Purpose: Report of the surgical resolution of a patient's case with surgery of hyperfiltrating glaucoma.

Method: Patient, 38 years old, with myopia of 4D, is prescribed surgery for glaucoma due to Juvenile Glaucoma. With 2 month of low vision post-surgery ask for and

second evaluation. The examination presents VA 3/10. BMC: Avascular bleb at 180 degrees superior, IOP 5 mmhg Pachymetry 439um. UBM:

Mottled heterogeneous many microcysts. No choroidal detachment optic nerve 0.8, macular folds.

Results: A plastic bleb was performed restricting the lateral filtration. A point of corneal traction is placed, conjunctival and tenon divulsion, A deep suture is administered with vycryl 8.0 from conjunctiva and tenon to episcleral. This is proceeded with a more superficial suture from conjunctiva to tenon with poliglicolic acid 10.0 round tip. A functioning filtrating bleb is able to be maintained but sectored. 3 weeks after this surgical intervention the patient presents: VA 7/10 IOP: 10 mmhg

Conclusion: Bleb conjunctival compression sutures can be a safe and effective solution for cases with a hyperfiltrating bleb and ocular hypotonia, achieving an increase in intraocular pressure and decrease in risk of losing the lines of visual sharpness.

EP-GLA-374

The protective effect of lipoic acid against oxidative damage of brain structures in a glaucoma rat model

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Purpose: Evidence of oxidative process was found in glaucoma brain so the use of an antioxidant therapy may hold a promise for treatment. The aim of this study was to evaluate the protective effect of lipoic acid (LA) against oxidative damage of geniculate nucleus (GN) and visual cortex (VC) in an experimental glaucoma model.

Method: Wistar rats (3 months) were divided in four groups: glaucoma in which rats were operated under a microscope by cauterized two of the episcleral veins (G), glaucoma treated with LA 100 mg/kg i.p. (LG), control which received a sham procedure (C) and control treated with lipoic acid 100 mg/kg i.p. (LC). Seven days after surgery rats were euthanized, brains were removed and GN and VC were separated. Thioredoxin reductase (TRxR), glutathione reductase (GR) and superoxide dismutase (SOD) activities, protein oxidation (PO), damage to lipids (TBARS) and glutathione (GSH) were evaluated.

Results: Comparing LG group to G group: TRxR increased 52% in GN (G:7.6±0.4 nmol/min.mg protein $p < 0.01$) and 26% in VC (G:9.9±1.0 nmol/min.mg protein $p < 0.05$), GR increased 82% in GN (G:8.2±1.2 nmol/min.mg protein $p < 0.01$) and 300% in VC (G:5.1±1.3 nmol/min.mg protein $p < 0.001$), SOD increased 23% in GN (G:18.0±1.1 U/mg protein $p < 0.05$) and 80% in VC (G:6.0±0.4 U/mg protein $p < 0.001$), PO diminished 52% in GN (G:22.9±2.3 nmol/mg protein $p < 0.05$) and 58% in VC (G:9.34±1.30 nmol/mg protein $p < 0.05$), TBARS diminished 25% in GN (G:4.8±0.4 nmol/mg protein $p < 0.05$) and 36% in VC (G:5.3±0.6 nmol/mg protein $p < 0.05$), GSH increased 42% (G:0.20±0.04 µmol/g $p < 0.05$) in GN and 73% (G:0.41±0.03 µmol/g $p < 0.01$) in VC.

Conclusion: The increase in GSH and in the activities of antioxidant enzymes could have been a consequence of the protective role of LA in oxidative processes in glaucoma. The protective effect against lipid and protein damage and the improvement in GSH recycling support that LA could be used as a novel therapy for reducing oxidative damage in glaucoma.

ELECTRONIC POSTER PRESENTATIONS
NEURO-OPHTHALMOLOGY

EP-NEO-376

Not to miss a pituitary adenoma*Leci E.¹, Jusufati A.¹, Tandili A.²*¹University Hospital Centre, Ophthalmology, Tirana, Albania,²University Hospital Center "Mother Tereza", ophthalmology, Tirana, Albania**Purpose:** To present a case of giant pituitary adenoma, with no other complaints but a progressive bilateral visual loss.**Method:** After taking carefully a throughout medical history, patient had an eye exam with measurement of visual acuity, fundus examination, visual field testing, CT scan of the head.**Results:** Examinations revealed a large pituitary adenoma, with optic atrophy in one eye and sub atrophy of the optic nerve in the other eye. Patient was then referred to a neurosurgeon for consult.**Conclusion:** Pituitary adenoma is one of the benign intracranial tumours. Patients present with different symptoms depending on the tumour and on the way it affects the levels of the hormones secreted from the pituitary gland. Medical/surgical treatment of adenoma stabilises the clinical parameters, prevents visual impairments if treated on time, affecting the quality of patient life.

EP-NEO-377

The activation of traumatic damage optic nerve's regeneration by using high doses of corticosteroids*Moyseyenko N.*

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Introduction: The research on the possibilities of regeneration of the optic nerve turns attention by scientist for many decades. The aim was to activate regenerative processes in the optic nerve traumatic injury at high doses of corticosteroids.**Methods:** It has been used six mature rabbits (Group injured), which made damage the optic nerve. Six rabbits (treated group) on the second day after the injury treated with the use administration of methylprednisolone.**Results:** At 14 days, after treatment of intracranial optic nerve improves microcirculation observed, accompanied by a decrease in swelling. There was detected remyelination regeneration of these fibers. There are young mitochondria in the axoplasm. There were formed microtubules and structured neurofilaments, which is an early sign of regenerative processes of the optic nerve.**Conclusion:** Consequently found that for traumatic optic nerve damage high doses of corticosteroids for 14 days results in improvement of microcirculation reduce swelling, remyelination and activation of regeneration.

EP-NEO-378

The tilted optic disc: interesting corresponding findings on Magnetic Resonance Imaging and clinical findings*Menassa N.¹, Tyradellis S.¹, George J.², Anwar S.¹, Sarvananthan N.¹*¹Department of Ophthalmology, Leicester Royal Infirmary, Leicester, United Kingdom, ²Department of Neurology, Leicester Royal Infirmary, Leicester, United Kingdom**Purpose:** To report a clinical case with a right tilted optic disc and interesting corresponding finding on Magnetic Resonance Imaging (MRI) imaging.**Method:** A 46-year-old healthy female patient with mild myopia attended the eye emergency department complaining of sudden onset vertical binocular diplopia. She denied any history of head trauma. The clinical examination suggested a fourth cranial nerve (CN) palsy. Dilated fundus examination showed a right raised optic disc with indistinct margins and a left unremarkable optic disc. She denied any symptoms suggestive of raised intracranial pressure. Her visual fields and urgent cranial tomography (CT) of her brain and orbits were normal. MRI brain and orbits was performed to rule out demyelination and was normal with a visible oblique insertion of the right optic nerve. The right optic disc was diagnosed as tilted.

Ultimately, she was diagnosed with a vasculopathic right fourth cranial nerve palsy, which spontaneously resolved over the course of 3 weeks.

Results: This was an interesting correlation of the clinical findings of a right tilted optic disc that could be visualised on the MRI scan of the orbits performed for another reason in this case.**Conclusion:** Tilted discs can be visualised on MRI imaging. However this should not be a first line clinical diagnostic tool as usually the clinical findings are sufficient to make the diagnosis.

EP-NEO-379

Optic neuropathy secondary to dolichoectatic arterial compression of the prechiasmatic optic nerve*Penilla J.S.*

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Purpose: To present an unusual case of bilateral optic atrophy secondary to a dolichoectatic arterial compression of the prechiasmatic optic nerve in a 50 year old female (from the Philippines).**Method:** Single observational case report in a National eye referral center of the Philippines. Patient is a 50 year old female patient who presented with a history of loss of vision on the left eye.**Results:** Dolichoectatic vasculature anomaly of the Internal Carotid artery as a cause of bilateral optic neuropathy is reported. Patient was advised to undergo CT angiography but she refused. Patient was referred to low vision clinic.**Conclusion:** Optic atrophy due to dolichoectatic anomaly is uncommon, but should be considered on a patient with unexplained progressive vision loss. Clinical suspicion of this disease entity is highly warranted after more common causes of optic nerve atrophy have been excluded. MRI with MRA confirms the diagnosis for possible neurosurgical intervention.

EP-NEO-380

Transient vision loss - case report

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Purpose: Transient Visual Loss (TVL) is a sudden loss of visual function in one or both eyes that lasts less than 24 hours. The most common cause of monocular TVL is retinal ischemia due to carotid artery disease. Occasionally TVL appears as an isolated sign and its transitory character may not correspond to the severity of the condition that is behind, such like a complete occlusion of internal carotid artery.

Method: The authors present a clinical case of a 77 years old man with an ophthalmologic history of medicated bilateral ocular hypertension, that presented in our emergency department with 2 months evolution of recurrent episodes with increasing frequency of blindness in the right eye (RE).

Results: The examination showed a best corrected visual acuity (BCVA) of 0.10 logMAR in the RE and 0.00 logMAR in the left eye and normal pupillary reflexes, bilaterally. RE gonioscopy revealed a plateau iris configuration with angle closure and an intra-ocular pressure of 22 mmHg, by applanation tonometry. RE funduscopy showed a diffuse concentric enlargement of the cup disc. We performed a Carotid and transcranial EcoDoppler examination, that showed occlusion of proximal right internal carotid artery (RICA) and low amplitude inverse flow of right ophthalmic artery. The occlusion of RICA was confirmed with carotid angio-CT.

Conclusion: Transient vision loss could be a diagnostic challenge. It is crucial to have a high suspicion level, particularly in patients with concomitant ocular diseases. The existence of a patent and functional collateral circulation may prevent damage to target organs, which may difficult the diagnosis.

EP-NEO-381

Nonarteritic anterior ischemic optic neuropathy and hemodilution therapy - a case report

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Purpose: We present a case of a patient with a history of bilateral nonarteritic anterior ischemic optic neuropathy (NAION) who underwent hemodilution therapy, in which a favorable clinical evolution was observed.

Methods: Male patient, 75 years old, medicated for hypertension, dyslipidemia and unspecified arrhythmia. NAION affecting the left eye (LE), a month before. Patient presented at the Emergency Room due to a sudden 24-hour evolution visual acuity (VA) decrease, affecting the right eye (RE). Best corrected VA (BCVA) was 10/10 RE and 3/10 LE; relative afferent pupillary defect LE; confrontation visual field testing showed a lower nasal defect RE and an upper and lower altitudinal defect LE; funduscopy revealed an edema affecting the lower quadrants of the optic disc RE and pale optic disc associated with two temporal peripapillary hemorrhages LE.

Results: Blood analysis showed a normal sedimentation rate and C-reactive protein. Hemoglobin was 16.1 g/dL and hematocrit 47.4%. Cranial CT-scan revealed atherosclerotic disease of the carotid artery. It was decided to proceed with hemodilution therapy until the hematocrit was reduced to 40%. At the

one month follow up, patient presented with a BCVA of 10/10 for the RE and 1/10 for the LE; a moderately pale optical disc without edema was observed in the RE and pale optic disc in the LE; visual field alterations were found to be more pronounced in the LE.

Conclusions: In this case, the patient underwent hemodilution therapy after both eyes had been affected by NAION. In this case, it seems that hemodilution therapy was

able to improve the outcome of the RE when compared to the LE that had previously suffered from NAION without hemodilution treatment. This suggests that hemodilution therapy could alter the natural course of NAION, in selected cases, and lead to an improvement in the visual prognosis.

EP-NEO-382

Extraocular muscles dysfunction with clinical characteristics of trochlear respectively complete oculomotor palsy in two different patients after herpes zoster ophthalmicus

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Purpose: To point out to possibility of uncommon complications of varicella zoster virus infection.

Method: Case report.

Results: We present two male patients of age 84 respectively 59 years. Both of them were diagnosed with herpes zoster ophthalmicus with serious run of the disease and many ocular complications. The first patient came to the clinic with typical vesicular rash of the forehead and keratitis. The course of the disease was complicated by facial erysipelas with fever. In that time also marked conjunctival chemosis appeared, bringing suspicion of associated orbital phlegmon. After reduction of the eyelid oedema patient reported vertical diplopia with oblique picture of the right eye. Hess chart revealed right superior oblique dysfunction. MRI of brain and orbits was negative. The second patient was firstly diagnosed as keratoconjunctivitis of the right eye, but a few days later the typical rash of the forehead appeared. During the course of the disease were present ocular hypertension with pressures in high forties, anterior uveitis with fibrin reaction and posterior synechiae. Early in the disease course there were ptosis of the upper eyelid, firstly masked as pseudoptosis caused by eyelid oedema and also ocular motility disruption. Detailed examination revealed dysfunction of all extraocular muscles innervated by right oculomotor nerve and also mydriasis - which was at the beginning masked by uveitis and it's treatment. Hess chart after passive opening of the eyelids by speculum confirmed the clinical findings. MRI surprisingly showed myositis of more extraocular muscles, orbital fat and perineural inflammation.

Conclusion: VZV infection can produce wide range of ocular complications including orbital inflammation and cranial nerve palsies both leading to diplopia.

EP-NEO-383

Tocilizumab in patients with giant cell arteritis: results from a phase 3 randomized controlled trial

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Purpose: The efficacy and safety of tocilizumab (TCZ), an IL-6 receptor- α inhibitor, was evaluated in patients with giant cell arteritis (GCA) in GiACTA, a randomized, double-masked, placebo-controlled trial. Week 52 outcomes are presented.

Method: Patients with confirmed active GCA were randomly assigned 1:1:2:1 to 4 groups: short-course prednisone (PBO+26) or long-course prednisone (PBO+52) (26-week or 52-week prednisone taper + weekly subcutaneous [SC] placebo, respectively) or weekly (TCZ-QW) or every-other-week (TCZ-Q2W) SC TCZ 162 mg + 26-week prednisone taper. Randomization was stratified by baseline prednisone dose (≤ 30 or > 30 mg/day) selected by the investigator (20-60 mg/day). Prednisone doses < 20 mg/day were masked. Sustained remission was defined as absence of flare, C-reactive protein normalization, and adherence to the protocol-defined prednisone taper from weeks 12 to 52. Primary and key secondary end points were the proportions of patients in sustained remission, comparing TCZ groups with the PBO+26 and PBO+52 groups, respectively (significance level, 0.005). Prednisone exposure was a secondary end point.

Results: Among 251 patients randomly assigned (mean \pm SD age, 69 \pm 8.2 years), 56.0% and 53.1% in the TCZ-QW and TCZ-Q2W groups, respectively, achieved sustained remission versus 14.0% in the PBO+26 group ($p < 0.0001$) and 17.6% in the PBO+52 group ($p \leq 0.0002$). Median cumulative steroid exposure was 1862.0 mg in both TCZ groups versus 3296.0 mg for PBO+26 and 3817.5 mg for PBO+52 ($p < 0.001$). Adverse events (AEs) were similar among the 4 treatment groups. Serious AEs were reported in 15.0%, 14.3%, 22.0%, and 25.5% of TCZ-QW, TCZ-Q2W, PBO+26, and PBO+52 patients, respectively. No deaths or new vision loss occurred.

Conclusion: TCZ 162 mg + 26-week prednisone taper was superior to PBO+26 and PBO+52 tapers in achieving sustained remission at 52 weeks. TCZ plus prednisone led to significant reductions in the cumulative prednisone doses required to control GCA.

EP-NEO-384

Pseudo-foster kennedy syndrome with evident etiology? - a clinical case report

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Purpose: We report a case of a patient showing unilateral papilledema in one eye, and optic atrophy in the contralateral eye.

Methods: Female patient, 75 years old, medicated for hypertension and diabetes mellitus type 2. Patient presented at the Emergency Room reporting of a week long sudden decrease of visual acuity (VA), of the right eye (RE), no other relevant symptoms were found. The left eye (LE) revealed an optic atrophy, due to old anterior ischemic optic neuropathy. On examination: best corrected VA (BCVA) RE: 5/10 and BCVA LE: 3/10; relative afferent pupil-

lary defect LE; funduscopy revealed an optic disc edema and flame-shaped peripapillary haemorrhages in the RE and a pale optic disc in the LE.

Results: Blood analysis, sedimentation rate and C-reactive protein were all within normal ranges. The right optic nerve-sheath complex was found to have a larger diameter than the left, when assessed by computed tomography scan (CT). No other alterations were observed, such as mass effect conditioning lesions or indirect signs of intracranial hypertension. A reduction of the retinal nerve fiber layer in the temporal sectors of the optic disc in the LE, was found on the optical coherence tomography (OCT).

Conclusions: In the nonarteritic anterior ischemic optic neuropathy (NAION), the involvement of the contralateral eye occurs in 15% of the cases, after 5 years. In this clinical case, the patient presented with an unilateral optic disc edema of the RE and optic atrophy of the contralateral eye, with a history of NAION and risk factors.

Although this clinical condition is suggestive of a pseudo-Foster Kennedy Syndrome due to this etiology, we highlight the importance of the exclusion of other causes, namely by imaging research.

EP-NEO-385

Transient homonymous hemianopia in glaucoma patient during migraine

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Purpose: To report an interesting case of transient right homonymous hemianopia in 66-year-old patient with primary open angle glaucoma.

Method: A 66-year-old patient diagnosed with primary open angle glaucoma for the last three years attended his regular glaucoma appointment. The patient had a known history of migraines but he was under no treatment at the time. During his visit, he reported suffering a migraine attack. His automated perimetry on the day demonstrated left homonymous hemianopia, a finding inconsistent with his previous visual fields testing. His visual field defects were attributed to his migraine. Subsequently, in his follow up visit, his visual fields had normalized.

Results: This was an interesting objective recording of the reported clinical symptoms of migraine with the automated perimetry.

Conclusion: The usual differential diagnosis of the visual fields defects attributed to migraine are stroke, occipital seizures, optic neuropathy, metabolic encephalopathy, lactic acidosis, and stroke-like episodes (MELAS). However, with the history of glaucoma, an additional diagnostic consideration might arise.

EP-NEO-386

Visual dysfunction evaluation with the new device monpack one, in patients with multiple sclerosis

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Purpose: To assess visual function in patients with Multiple Sclerosis (MS) using the new device MonPack One visual stimulator (Metrovision, France).

Method: Forty eight eyes from relapsing-remitting MS patients and forty six eyes from controls were included. Disease duration, ophthalmic outbreaks and type of treatment were assessed. All patients underwent visual function

evaluation using MonPack One visual stimulator. The protocol consisted of psychophysical tests (low contrast 10% ETDRS visual acuity -VA-, contrast sensitivity [1, 2, 5, 10, 20 cycles per degree], FAST 30 static visual field, and electrophysiological testing (pattern electroretinography-ERG-, multifocal reversal visual evoked potential -VEP-).

Results: A statistically significant decrease was observed in the MS group compared with controls in low contrast 10% VA ($0,08 \pm 0,27$ vs $0,43 \pm 0,50$, respectively), well-read number letters ($39,70 \pm 5,58$ vs $31,90 \pm 8,20$), low (0.5 and 1cpd; $p < 0.05$) and medium spatial frequencies (2 and 5 cpd; $p < 0.05$) in contrast sensitivity, in all visual field parameters and central ($1556,81 \pm 1120,97$ vs $798,80 \pm 585,58$ nV/deg²) inferior nasal ($798,50 \pm 390,14$ vs $523,90 \pm 262,71$) and inferior temporal ($830,40 \pm 380,09$ vs $677,55 \pm 730,19$) sectors of the multifocal VEP. No differences were found in pattern ERG.

Conclusion: MonPack One visual stimulator allowed the study of visual function in a controlled and protocolized way. MonPack One detected low contrast visual acuity, contrast sensibility, visual field, and multifocal visual evoked potential alterations in patients with MS.

EP-NEO-387

MMP-14 and TGFB-1 methylation in pituitary adenoma

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Purpose: The purpose this investigation was to determine if the methylation status of *MMP-14* and *TGFB-1* promoters have an association with pituitary adenoma development.

Method: In this study we used 120 tissue samples of pituitary adenoma. The methylation status of *MMP-14* and *TGFB-1* promoters was investigated by methylation specific PCR reaction (MS-PGR). For statistical analyses the IBM program "SPSS Statistics 20" was used. Statistical analysis was conducted to investigate the associations between the methylation status, age and gender of PA patients, PA tumoral activity, recurrence and invasiveness.

Results: The *MMP-14* gene was methylated in 30% (17/56 functioning and 19/64 non-functioning) and the *TGFB-1* gene in 13.33% (9/56 functioning and 7/64 non-functioning) of patients with pituitary adenoma. It was also discovered that promoter methylation of *MMP-14* correlate with the male gender (58.8 % vs. 35.7 %, $p=0.022$) and unmethylated (non-silenced) *MMP-14* with the female gender (64.3 % vs. 41.7 %, $p=0.027$). Associations between promoter methylation of *MMP-14* and *TGFB-1* genes and PA functioning or recurrence were not found.

Conclusion: This study reveals that silencing of the *MMP-14* gene correlates to patients' gender.

EP-NEO-388

Non-arteritic anterior ischemic optic neuropathy associated with spontaneous intracranial internal carotid artery dissection (ICAD) in young patient

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Purpose: The objective of this study was to investigate the relationship between intracranial internal carotid artery dissection and anterior ischemic optic neuropathy.

Method: A 33-year-old male patient presented to the Emergency Department with sudden vision loss in his right eye with reduced to counting fingers visual acuity, right afferent pupillary defect, altitudinal visual field defect and diffuse pale optic disc swelling with peripapillary flame haemorrhages. Because of dysequilibrium, headache in the right frontal region and 15-minute episode of slurred speech, left lower-face and left upper extremity weakness patient was admitted to the Neurology Department. The following investigations were obtained: detailed medical, neurological and ocular histories, internal carotid artery assesment by duplex ultrasonography, Magnetic Resonance Angiography, Computed Tomography Angiography, Fundus Fluorescein Angiography, Color Doppler Imaging of retrobulbar vessels, Visual Field testing, management and follow-up.

Results: A patient was diagnosed with anterior ischemic optic neuropathy due to a spontaneous dissection of the proximal intracranial segment of the right internal carotid artery.

Conclusion: Anterior ischemic optic neuropathy is a rare manifestation of intracranial carotid artery dissection. It should be taken into consideration in differential diagnosis of anterior ischemic optic neuropathy in young patients with transient monocular vision loss associated with pain. Quick diagnosis is important to prevent hemispheric stroke the major complication of ICAD.

EP-NEO-389

Use of swept-source optical coherence tomography to study patients with Parkinson's disease: changes in the retinal and choroidal thickness in the macular area

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Purpose: To analyse the thickness of the retina and choroid in the macular area in patients with Parkinson's disease (PD) using swept-source optical coherence tomography (SS-OCT) as a marker for neurodegenerative injury.

Method: 108 eyes of patients with PD and 90 eyes of healthy subjects were included. There were no significant differences in age or sex between the groups. No individual had glaucoma. They all were tested with SS-OCT Triton (Topcon), 3DH Wide protocol. Macula ETDRS data were analysed: macular area, thickness of the retina and choroid.

Results: Patients with PD revealed significantly lower figures than healthy subjects concerning retinal thickness in the outer nasal region (276.70 ± 17.64 vs 282.44 ± 9.64 ; $p=0.043$).

Regarding choroidal thickness, patients with PD revealed significantly higher figures than healthy subjects in the inner nasal region (250.78 ± 99.50 vs

205.28±81.62; p=0.014), outer nasal region (207.11±97.78 vs 163.39±70.02; p=0.011), inner inferior region (252.25±96.54 vs 213.65±80.31; p=0.032) and outer inferior region (233.00±89.10 vs 200.15±75.19; p=0.049).

Conclusion: SS-OCT Triton detects a decrease in the thickness of the retina and an increase in the thickness of the choroid in the macular area in patients with PD.

EP-NEO-390

Use of swept-source optical coherence tomography to study patients with Parkinson's disease: changes in the retinal and choroidal thickness in the peripapillary area

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Purpose: To analyse the thickness of several retinal layers and the thickness of the choroid in the peripapillary area in patients with Parkinson's disease (PD) using swept-source optical coherence tomography (SS-OCT) as a marker for neurodegenerative injury.

Method: 108 eyes of patients with PD and 90 eyes of healthy subjects were included. There were no significant differences in age or sex between the groups. No individual had glaucoma. They all were tested with SS-OCT Triton (Topcon), 3DH Wide protocol. RNFL-TSNIT data were analysed: peripapillary area; retina, retinal nerve fiber layer (RNFL), GCL+ layer (from RNFL to inner nuclear layer), GCL++ layer (from inner limiting membrane to inner nuclear layer) and choroid.

Results: Patients with PD revealed significantly lower figures than healthy subjects in every retinal layer: total thickness of the retina (280.25±20.18 vs 288.18±13.09; p=0.013), temporal region of the retina (270.55±18.72 vs 280.21±15.33; p=0.003), nasal region of the retina (254.48±19.83 vs 261.55±14.85; p=0.033), temporal inferior region of the RNFL (135.08±25.28 vs 144.23±17.19; p=0.024); temporal superior region of the GCL+ (38.52±7.02 vs 41.78±9.24; p=0.047); temporal inferior region of the GCL++ (176.00±28.07 vs 187.07±16.93; p=0.010). On the contrary, patients with PD revealed significantly higher figures than healthy subjects in total thickness of the choroid (153.56±62.48 vs 125.64±52.53; p=0.012), nasal region of the choroid (152.73±50.54 vs 129.32±54.86; p=0.024), temporal region of the choroid (165.82±80.16 vs 128.40±50.81; p=0.003) and inferior region of the choroid (129.90±64.70 vs 98.83±51.67; p=0.006).

Conclusion: SS-OCT Triton detects a decrease in the thickness of the retina, the retinal nerve fiber layer and the ganglion cell layer and an increase in the thickness of the choroid in the peripapillary area in patients with PD.

EP-NEO-391

Lamina cribrosa thickness in patients with type 2 diabetes mellitus depending on the compensation of diabetes

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Purpose: Lamina cribrosa is putative primary site of axonal injury. So, its changes might cause primary optic nerve damage and secondary damage due to decreasing of blood supplying and axoplasmic transport. The aim was to investigate the lamina cribrosa (LC) thickness of diabetic patients depending on the the compensation of diabetes.

Method: The study comprised 34 diabetic patients aged 46-69 and 30 healthy people. Depending on the Hb A1C level the compensation of diabetes was registered in 14 patients, the subcompensation - in 12 patients, the decompensation - in 8 patients. Research method was spectral domain optical coherence tomography (OCT) of the optic nerve head with the help of RTVue-100 (Optovue, USA). To increase the quality of the image and reduce noise we used MATLAB, packages: Frequency Domain Processing, DICOM View, Graph-based segmentation of retinal layers in OCT images, Tools for NIFTI and ANALYZE image GBFMT Image Denoising Codes.

Results: It was possible to evaluate the LC thickness in 27 diabetic patients and 26 healthy patients. The average LC thickness in diabetic patients was 578±211 µm (362 to 973 µm) and significantly higher than in healthy people 252±57 µm (189 to 394 µm), p<0.05. The average LC thickness depended on the Hb A1C level: was 3.9 times higher while decompensated (895±171 µm), 2.6 times higher while subcompensated (592±163 µm), 1.5 times higher while compensated (352±165 µm) than in healthy patients.

Conclusion: The present study reveals that LC is significantly thicker in diabetic patients than in healthy people. LC thickness depends on the Hb A1C level and is the highest while decompensated diabetes mellitus. Thus, observation of lamina cribrosa in diabetic patients should expand our understanding on the diabetic optic neuropathy and help to develop better strategy in its treatment.

EP-NEO-392

MMP-2 mRNA expression in pituitary adenomas

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Purpose: Pituitary adenoma (PA) is a common benign neoplasm which can extend into surrounding structures thus resulting in neurological complications including visual disturbances. The aim of our study was to examine MMP-2 mRNA expression in PA and to determine the association between MMP-2 mRNA expression and invasiveness and recurrence of PA.

Method: The study was carried out at the Department of Ophthalmology and Department of Neurosurgery, Lithuanian University of Health Sciences. Study participants comprised of 106 subjects with a diagnosis of PA. The retrospective analysis of MRI data was conducted by an experienced radiologist. PA tissue samples were snap-frozen in liquid nitrogen prior to RNA extraction. MMP-2 mRNA expression levels were evaluated by qRT-PCR.

Results: Median MMP-2 mRNA level in the non-recurrent PA was 1.802 (min -3.423; max 9.949) and 2.169 (min -0.384; max 6.048) in the recurrent PA group respectively. Median MMP-2 mRNA level in non-invasive PA group was 1.823 (min -1.728; max 8.094) and 1.791 (min -3.423; max 9.949) in invasive group respectively. Difference in the expression level of MMP-2 mRNA were not significantly related to invasiveness and recurrence of PA (p>0.05).

Conclusion: MMP-2 mRNA is not associated with pituitary adenoma invasiveness and recurrence, but further research is required with a larger number of patients.

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EP-NEO-393

Macular thickness changes using spectral-domain optical coherence tomography automated layer segmentation in multiple sclerosis

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Purpose: Evaluate the role of automated layer segmentation in MS patients' management.

Method: Retrospective study that included 39 patients (78 eyes) with confirmed diagnosis of MS and 35 healthy age-matched controls. Macular spectral-domain optical coherence tomography scans (SD-OCT, Heidelberg Engineering, Heidelberg, Germany) were obtained followed by automated retinal layer segmentation at the center of fovea and at a radius of 3 to 6mm from the superior, inferior, temporal and nasal sectors (ETDRS grid). Patients with MS were subdivided into two groups:

1) with known previous ON,
2) not known previous ON. Statistical analysis using two sample t-test was made to calculate significant results between groups with 95% confidence interval.

Results: Total central and inner layers macular thickness was significantly reduced in MS patients compared to control group ($p < 0.05$) predominantly due to retinal nerve fibre (RNFL), ganglion cell (GCL) and inner plexiform layers (IPL) reduction in foveal, parafoveal and perifoveal sectors with exception of RNFL temporal sector. GCL and IPL were significantly reduced in foveal and parafoveal sectors between group 1 and 2 ($p < 0.05$) while no significant RNFL reduction was observed between these groups.

Conclusion: Reductions in total central and inner layers macular thickness can be detected in MS eyes with or without a previous history of known ON. As many ON episodes are not clinically detected, OCT may act as CNS imaging tool documenting neuronal degeneration in MS patients.

EP-NEO-394

Role of matrix metalloproteinase 9 on pituitary adenoma behaviour: correlation with PA invasiveness, recurrence and hormonal activity

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Purpose: The aim of this study was to investigate the possible involvement of Matrix Metalloproteinase 9 (MMP-9 mRNA) expression in the pituitary adenoma (PA) invasiveness, recurrence and hormonal activity.

Method: The study was conducted in Ophthalmology and of Neurosurgery Departments of the Lithuanian University of Health Sciences. The study group comprised of 106 subjects with a diagnosis of PA. All pituitary adenomas were analyzed based on MR imaging findings. The retrospective

analysis of MR imaging data was conducted by an experienced radiologist. Quantitative reverse transcription PCR was used to evaluate MMP-9 mRNA expression levels.

Results: Median MMP-9 mRNA level in the non-recurrent PA group was 2.274 (min -1.917; max 13.017) and 2.692 (min 0.109; max 5.281) in the recurrent PA group respectively. Median MMP-9 mRNA level in the non-invasive PA group was 1.983 (min -1.553; max 13.017) and 2.381 (min -1.917; max 12.076) in the invasive PA group respectively. Median MMP-9 mRNA level in the hormonally inactive PA group was 2,752 (min -1.529; max 13.017) and 1.871 (min -1.917; max 8.471) in the hormonally active PA group respectively. The research showed that there is no significant difference between the expression level of MMP-9 mRNA and PA invasiveness, recurrence and hormonal activity ($P > 0.05$).

Conclusion: MMP-9 mRNA expression does not have influence on PA invasiveness, recurrence and hormonal activity. Our study suggests that the effects of MMP-9 mRNA expression on PA behaviour deserve further investigation.

Financial support: Research Council of Lithuania (grant no. MIP-008/2014).

EP-NEO-395

Subclinical optic neuritis in patients with multiple sclerosis

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Purpose: To assess vision impairment in multiple sclerosis patients without a history of acute optic neuritis.

Method: The study included 35 multiple sclerosis patients aged 18-50 years, without subjective signs of vision impairment. The diagnosis of multiple sclerosis was made by a neurologist. All patients had visual acuity 1.0 according to Snellen. There were no data on vision loss in patient histories. All patients underwent visual acuity testing, biomicroscopy, ophthalmoscopy, applanation tonometry and pupillary reaction testing, Octopus 900 perimetry, Color vision testing by use of Ishihara pseudoisochromatic plates, contrast sensitivity testing by Pelli Robson chart. Control group included 35 age- and sex-matched healthy subjects.

Results: All patients had 1.0 visual acuity according to Snellen. Visual field defects were found in 25 patients. Mean MD for the right eye was 2,42 SD 1,65 and for the left eye was 2,38. SD 1,64. In control group MD for the right eye was -0,71 SD 0,55 and for the left eye -0,8 SD 0,53. We found following pattern of visual field defects: retinal sensitivity depression in peripheral zone in 11 patients, retinal sensitivity depression in peripheral zone with paracentral scotomas in 4 patients, nerve fiber bundle defect in 3 patients, blind spot enlargement in 3 patients and hemianopic visual field defects in 2 patients. Paracentral scotomas only were found in 2 patients. Contrast sensitivity was reduced in 22 patients. Mean logCS value was 1,64 SD 1.15 for the right and for the left eye and 1,79 SD 1,15 for both eyes. In control group Mean logCS value was 1,80 SD 0,00 for the right and for the left eye and 1,95 SD 0,00 for both eyes.

Conclusion: Results of the present study suggest that multiple sclerosis patients free from signs of optic neuritis and without history of optic neuritis could have inapparent visual impairment. This impairment could be revealed with careful examination with functional tests of vision.

EP-NEO-396

Correlation between visual function and retinal changes in patients with Parkinson's disease

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Purpose: To evaluate visual dysfunction and its correlation with structural changes in the retina in patients with Parkinson disease (PD).

Methods: Patients with PD (n=37) and controls (n=37) underwent visual acuity (VA), color vision (using the Farnsworth and L'Anthony desaturated D15 color tests), and contrast sensitivity vision (CSV; using the Pelli Robson chart and CSV 1000E test) evaluation to measure visual dysfunction. Structural measurements of the retinal nerve fiber layer (RNFL), and macular and ganglion cell layer (GCL) thicknesses were obtained using spectral domain optical coherence tomography (SD-OCT). Comparison of obtained data and correlation analysis between functional and structural results were performed.

Results: VA (in all different contrast levels) and all CSV spatial frequencies were significantly worse in PD patients than in controls ($P < 0.05$). Color vision was significantly affected ($p < 0.05$) based on the L'Anthony color test. Macular thinning was detected in the central, outer (inferior and temporal), and superior (inner and outer) sectors ($p < 0.05$), and the RNFL had significant thinning in the temporal quadrant ($p < 0.05$). Significant GCL loss was observed in the superior and superonasal sectors and the minimum GCL + inner plexiform layer ($p < 0.05$). CSV was the functional parameter most strongly correlated with structural measurements in PD. Color vision was associated with most GCL measurements. Macular thickness was strongly correlated with macular volume and functional parameters ($r > 0.70$, $p < 0.05$).

Conclusions: Patients with PD had visual dysfunction that correlated with structural changes evaluated by SD-OCT. Macular and GCL measurements may be reliable indicators of visual impairment in PD patients.

EP-NEO-397

Ability of swept-source optical coherence tomography Triton to evaluate retinal layer and macular thickness in patients with multiple sclerosis

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Purpose: To evaluate macular thickness measurements changes in multiple sclerosis (MS) patients using Swept-source optical coherence tomography (SS-OCT).

Method: 101 healthy and 97 MS eyes were included in the study. All of them underwent evaluation of retinal measurements using DRI Triton 3DH wide scan SS-OCT. Nine macular ETDRS areas, average and central thickness, total macular volume and choroidal thickness were analysed. Comparisons between the two groups were performed using Student's T test.

Results: All retinal measurements in the ETDRS macular map showed significant reduction in MS patients. Average thickness (280.41 μm in controls vs 266.96 μm in patients, $p = 0.010$) and total macular volume (7.92 μm vs 7.54 μm ; $p = 0.010$). No significant reduction of the choroid layer thickness was found between patients and controls.

Conclusion: SS-OCT Triton is an effective method to detect retinal atrophy in MS patients. Further studies comparing Spectral domain and Swept source OCT are needed to demonstrate superior capability of SS-OCT technology to detect retinal changes

EP-NEO-398

Posttraumatic regeneration of the optic nerve in rabbits

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Purpose: The purpose was to show traumatic optic nerve lesion's morphology using by experimental studies.

Method: the simulation of traumatic lesions of the optic nerve was made on 7 rabbits weighing 3.5-4.0 kg. As a control group - 6 rabbits.

Results: One of the first signs of damage to the optic nerve has been a violations pupillary response on the affected side. In this case there was no direct response to the light.

Only at the end of the first month there was a slight recovery pupil reaction.

There were used morphology examination cranial part by optical nerve both eyes damages (at the 14-th day) and control animals. It was made electron microscopy by microscope PEM 125-K. Half a thin slices colored by methylene blue 1% solution and polychromatic dye. They were examined using by magnification 400. Ultra thin slices were examined using by magnification 4800-64000.

Conclusion: Identified as a result of the experimental study structural damage to the cranial part of the optic nerve, manifested destructive changes as nervous tissue and microcirculation disorders on the affected side, and the beginning of the atrophic process (replacement of nerve connecting tissue) within 2 weeks after simulated injury. Perycapillar swelling and thinning of the nerve fiber's myelin indicates the onset of degenerative changes on the opposite side of the place of injury.

The proposed model with temporary clamping the optic nerve at the apex of the orbit can be used for further experimental studies of the pathogenesis and research of therapeutic agents in traumatic optic neuropathy.

EP-NEO-399

Ability of swept-source optical coherence tomography Triton to evaluate retinal nerve fiber layer in multiple sclerosis patients

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Purpose: To evaluate retinal nerve fiber layer (RNFL) thickness measurements changes in multiple sclerosis (MS) patients using Swept-source optical coherence tomography (SS-OCT)

Method: 101 healthy and 97 MS eyes were included. All of them underwent retinal evaluation using DRI Triton 3DH wide scan and retinal peripapillary thickness was analyzed: Total retinal thickness, CFNR, GCL+ (ganglion cells layer between CFNR and inner nuclear layer) and GCL++ (from the inner limiting membrane to inner nuclear layer) thickness were evaluated. Comparisons between the two groups were performed using Student's T test.

Results: GCL+ showed significant thinning in MS patients compared to controls, in temporal, nasal and superonasal sectors; GCL++ and RNFL thickness were significantly lower in the MS group in all the sectors except nasal; total retinal thickness was lower in MS patients in all sectors. ($p < 0.05$)

Conclusion: Peripapillary retinal structural alterations can be detected in MS patients using SS-OCT Triton. Further studies comparing Spectral domain and Swept source OCT are needed to demonstrate superior capability of SS-OCT technology to detect retinal changes in these patients.

EP-NEO-400

Non-paralytic pontine exotropia - a clinical case report

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Purpose: To report a rare clinical case of internuclear ophthalmoplegia (INO) associated with exotropia in the contralateral eye, known as non-paralytic pontine exotropia and to elucidate the importance of eye movement disorders as initial presentation of cerebrovascular accident.

Method: This clinical case was elaborated through the clinical presentation, the review of clinical file, ophthalmologic and neurologic examination, imagiologic and laboratorial studies. The management approach was done in close cooperation with neurology.

Results: We report the case of a 80 years-old woman with acute onset of diplopia and unsteadiness since the night before the admission in our urgent care service. Her relevant active problems include hypertension, dyslipidemia and ischemic cardiopathy. On admission, the right eye on forward gaze was fixed at the midline, while the left eye was abducted (left exotropia). The examination of ocular motility revealed that during the leftward gaze, the right eye did not adduct past the midline and the fully abducted left eye showed left-beating nystagmus. Regarding to imaging studies, the brain MRI showed two small areas of high signal intensity, one beneath the inferior portion of the aqueduct and another one of occipital location. This findings were compatible with the diagnosis of vertebrobasilar ischemic stroke. During hospitalization the anti-platelet therapy with acid acetylsalicylic that was already part of her chronic medication was maintained. Two days after onset, the symptoms of diplopia and abnormalities of ocular mobility had disappeared and the neurologic examination was normal.

Conclusion: There is a scarcity of reported cases documenting neuro-ophthalmic pathology as primary manifestation of vertebrobasilar stroke. This case illustrates how important it is to consider a cerebrovascular event early in the differential diagnosis of eye movement disorders.

EP-NEO-401

Acute unilateral disc oedema

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Purpose: To present a case of a 44-year-old male patient complaining of sudden left eye pain not associated with trauma. No past medical history.

Method: The patient had uncorrected visual acuity of 20/20 in both eyes (Snellen chart), no relative afferent pupillary defect and normal eye movements. Slit-lamp biomicroscopy was normal. Fundus examination showed retinal venous engorgement associated with hyperaemic optic disc oedema, some flame-shaped retinal haemorrhages near the disc and macular oedema. Lumbar puncture, blood tests and further exams to better characterize the patient were ordered.

Results: Fluorescein angiography revealed retinal venous staining and leakage associated with circulatory slowing. Visual field testing showed blind spot enlargement. Optical coherence tomography confirmed disc oedema and a discrete macular serous detachment.

Pattern visual evoked potentials, colour vision test, magnetic resonance imaging of the orbit and brain were normal.

Cerebrospinal fluid and blood tests for infection and autoimmunity were normal. No blood clotting disorders were detected.

Conclusion: The diagnosis of papillophlebitis was assumed and the patient was started on intravenous methylprednisolone for 3 days and then switched to oral prednisolone (dose 60 mg). Marked improvement occurred but with

relapsing complaints when an attempt was made to taper the dosage. Although spontaneous resolution is described in the literature after 6-12 months, we feel that avoiding the long-standing disc oedema may have an impact on final visual impairment. After a month of therapy, the patient visual function is still normal except for an enlarged blind spot. Left eye fundoscopic findings are almost normal.

EP-NEO-402

Benign episodic unilateral mydriasis - case report

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Purpose: Presentation of rare pupil disorder of benign episodic unilateral mydriasis that was not associated with migraine.

Method: The patient was referred by a neurologist for an ophthalmologic examination. A 26-year-old female with a history of allergic conjunctivitis, sideropenic anemia, Hashimoto disease, hyperprolactinemia presenting recurrent blurred vision and unilateral pupillary dilation which were not associated with headaches. The self-limited symptoms occur few times a week (4-5/week) of unknown trigger.

Results: Neurological reasons of mydriasis and blurred vision were investigated and excluded. MRI and angio-CT scan of CNS were undertaken. Pupils reaction to light both in darkness and light were checked whereas anisocoria was more marked in light. No other ophthalmological disturbances were found.

Conclusion: Anisocoria is often viewed as a worrying sign but each case merits individualized medical decision making. Benign episodic unilateral mydriasis should be considered as a possibility.

EP-NEO-403

Charles Bonnet syndrome - case report

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Introduction: Charles Bonnet syndrome (CBS) is a rare condition that encompasses three clinical features: vivid and complex visual hallucinations, ocular pathology causing deterioration of visual acuity and preserved cognitive status. The most common ocular pathologies associated with CBS include age-related macular degeneration, cataract and glaucoma.

Purpose: Provide an overview of clinical signs and treatment of this rare eye condition.

Method: A female patient, age 70, consulted ophthalmologist because of visual hallucinations that included: a child, a man's arm and pigeons. Hallucinations were occurring over the period of 4 months and the patient was aware that they were not real. Psychiatric examination ruled out any psychological disorder.

Results: A complete ophthalmological examination was done and the findings showed visual acuity in the right eye 0.3 cc - 3.5 Dsph = 0.5, in the left eye 0.5 cc - 2.0 Dsph = 0.6-0.7 and bilateral cataract. CT scan and MR examination of endocranium and orbits detected no abnormality.

No condition was diagnosed by neurological examination and EEG showed no pathological changes. Cataract surgery by phacoemulsification method was performed on the patient on both eyes, within one month of each other, after which visual hallucinations stopped. Visual acuity in the right eye was 1.0, and 0.9-1.0 in the left.

Conclusion: In patients with visual hallucinations and eye conditions affecting visual acuity, presence of CBS should be considered. Distinction between CBS and mental disorders is of crucial importance as patients with CBS are not fully aware that hallucinations are not real. Both the ophthalmologist and the psychiatrist have to be equally aware of CBS presence in order to enable prompt diagnosis and treatment.

EP-NEO-404

Dark and vision, visual perception in art and space in scotopic conditions

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Purpose: Our aim is to investigate the visual function and the perceptual ability under scotopic (low light) conditions

Method: We study the physiology of vision under low light conditions, we use examples of images that have been captured under these conditions, and we also use pieces of art, specially made for this presentation to explain the thoughts and the visual perception of the artist

Results: Finally we record the effect on the parameters of the quality of vision, the role of contrast sensitivity the color perception, the sense of space and 3D vision and the effects on the human visual perception at all.

Conclusion: The vision in the dark is a very interesting and fascinating topic which deals with the wide abilities of the eye and the brain to handle those difficult conditions

EP-NEO-405

A curious case of unilateral optic disc swelling

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Purpose: There exist many varied causes for unilateral optic disc swelling. We present an unusual case of unilateral optic disc swelling which we believe could have been caused by a posterior vitreous detachment.

Methods/Case History: A 34 year old female Intensive Care Nurse presented two weeks after a long-haul flight returning from Canada. She complained of blurred vision and floaters in her left eye associated with intermittent dizziness. She was otherwise fit and well with no previous ocular history, medical history or medications. On examination her visual acuities in both eyes were 6/9 unaided. Colour vision was normal and she had normal pupillary reactions. Anterior segment examination was unremarkable. Posterior segment examination revealed optic disc oedema in the left eye with a small pre-retinal haemorrhage inferior-temporal to the disc. Posterior segment examination was normal in the right eye. Neurological examination was normal. Fundus photographs taken 6 months early show previously normal disc and fundus.

Results/investigations: A Humphrey Visual Field assessment showed an enlarged blind spot on the left eye. Blood tests including U&E, FBC and inflammatory markers were normal, and an MRI head scan showed no abnormalities. By September the left optic disc swelling and pre-retinal haemorrhage had reduced and by October both had fully resolved. One year on she remains symptom free with normal discs.

Conclusions: Causes for unilateral optic disc oedema include demyelinating optic neuritis, NAION, retinal vein occlusion and diabetic papillopathy. In all these cases, however, the patient would present with reduced vision alongside other signs of optic nerve functional impairment such as RAPD. In this case visual acuity remained normal and there was no RAPD. We have postulated a new theory to account for this unusual case of unilateral disc oedema.

EP-NEO-406

Preterm children and optic nerve thickness

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Purpose: The aim of our work was to determine changes in optic nerve diameter in full-term and prematurity children eyes by precise ultrasound measurement.

Method: The study was made on healthy full-term children eyes (1st group n=30) and pre-term children eyes (2nd group n=60). The age of children ranged from 5 to 17 years old. Gestation age in pre-term group ranged from 25 to 34 weeks. All were seen for the risk of developing retinopathy of prematurity.

Results: Ultrasonic measurement of optic nerve diameter evaluates differences in full-term and prematurity children eyes. Optic nerve diameter in full-term children eyes was 3,25±0,13 mm. And in pre-term children eyes 2,63±0,22 mm (p<0,05).

Conclusion: Our results are important for interpretation of optic nerve pathology in full-term and pre-term children eyes.

EP-NEO-407

Optic atrophy as primary manifestation in a patient with parasellar meningioma

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Purpose: To report a case of unilateral optic atrophy in a patient with several risk factors for developing this pathology.

Method: We present a case of a 60 year-old man with gradual loss of visual field, slowly progressive visual acuity and color vision loss at left eye. From his medical history we identify several risk factors for optic atrophy: smoking, alcohol drinking, systemic hypertension, hyperlipidemia, carotid occlusive disease and a chronic proliferative disorder. We performed careful clinical examination, visual field testing and neuroimaging. The diagnosis of compressive optic neuropathy was delayed due to a normal neurological exam.

Results: Based on the personal history, clinical evaluation, laboratory studies, retinophotography, visual field testing, optical coherence tomography and MRI of the brain we established the main, secondary and general diagnostics. Visual acuity and visual field in left eye were severely and irreversible affected, but right eye was spared due to a prompt therapeutical approach.

Conclusion: Ocular manifestations of intracranial tumors are very frequent in clinical practice and this findings should be carefully evaluated to avoid a delay in the diagnosis of life-threatening pathologies.

EP-NEO-408

Anatomical grounds of optic "tunnel" syndrome development*Huseva Y.^{1,2}, Denisov S.¹**¹Belarusian State Medical University, Human Anatomy Department, Minsk, Belarus, ²4th City Children Hospital, Ophthalmology Department, Minsk, Belarus*

Purpose is to reveal the optic canal (OC) and its contents development regularities in human embryogenesis.

Methods: 105 human embryos from 4 up to 70 mm parietococcygeal length (PCL) were investigated. Embryos were stained by silver nitrate using Bilshovsky-Buke method and then by haemotoxilinum and aezinum. Measurements were made on hardware-software complex Bioscan AT +. Optic nerve (ON) and OC diameter in its cranial, orbital aperture and in the middle part, the distance between OC walls, ON and an ophthalmic artery were determined.

Results: OC wall development stages correspond to the stages of skeleton formation, but their morphogenesis is an asynchronous process: differentiation of superior wall occurs slower than OC inferior, medial and lateral walls that can be caused by the stimulating impact of the ophthalmic artery. Transformation of paraneural mesenchyma both into ON common neural vagina and a wide layer of perichondrium in embryos of 15-17 mm PCL was accompanied by the reduction of OC diameter. Close interconnections between tendons of oculomotor muscles and OC walls contribute to the tension and displacement anterior wall medially, posterior wall - laterally. Transition of OC walls from one stage to another was accompanied by decelerating their growth. OC growth occurred when ON/OC diameter ratio reached the certain value which in the OC cranial aperture did not exceed 0,5 that was accompanied by even growth of cranial aperture in embryos of 22-29, 32-35, 46-56, 57-70 mm PCL. In the middle compartment the ratio was the largest and constituted 0,7, in the OC orbital aperture it reached 0,6.

Conclusions: The revealed periods of OC embryogenesis reflect interrelations of its structural components, infringement one of which changes inevitably the others. Determined ON/OC diameter ratio was considered to become crucial for the normal formation of ON and OC. Its exceeding can result in ON "tunnel" syndrome, OC middle part is the most dangerous for it.

EP-NEO-409

Abstract has been withdrawn.

ELECTRONIC POSTER PRESENTATIONS
OCULAR SURFACE

EP-OCS-414

Clinical effects of the switch to unpreserved artificial tears in patients previously treated with preserved ones*Nasser Nasser L., EL GRECO**Hospital San José, Monterrey, Mexico*

Purpose: To objectivate the benefits provided by the use of preservative-free artificial tears in patients with dry eye previously treated with preserved lubricants

Method: A multicentric, prospective and transversal study. We included patients with dry eye treated with preserved lubricant for at least 6 months prior to the study. After a first evaluation including OSDI score and fluorescein test, a preservative-free artificial tear (Hyabak®, Thea Laboratories) was prescribed. A second identical evaluation was performed, at least 3 weeks after the treatment was switched, together with patients' comfort and satisfaction evaluation.

Results: 1,253 patients were followed by 41 physicians in 6 cities of the country, from April to September 2016; 61% female and 39% male, mean age 51.1 years. In the first evaluation they reported having used preserved artificial tears for an average of 15.8 months, with an average instillation frequency of 4 times per day. 72% of patients presented superficial punctate keratitis (SPK) evidenced by fluorescein test.

The average OSDI score was 56.1: 81% of the patients were considered as presenting severe dry eye. In the post switch assessment, 38% of patients with SPK at the first evaluation presented no more signs of SPK. 97% of patients improved their OSDI score, with an average improvement of 50% ($p < 0.0001$); only 35% of patients were considered having a severe dry eye.

In the overall assessment 94% of patients felt greater relief with the use of preservative-free artificial tears.

Conclusion: All preservatives can cause damage to the ocular surface, especially in case of long term use. Although contemporaneous pathologies or treatments have not been assessed, this study confirms that the use of preservative-free artificial tears provide an improvement of the status of the ocular surface and a significant improvement of the OSDI score, together with a decrease of dry eye symptoms.

EP-OCS-415

PRGF ENDORET® optimizing results*Vendrell Gomez C.^{1,2}, Piludu S.¹, Ubía S.¹, Duch Tuesta S.³**¹Institut Comtal Oftalmologia, ICO Innova Barcelona, Dry Eye Department, Barcelona, Spain, ²Hospital de Viladecans, Viladecans, Spain, ³Institut Comtal Oftalmologia, ICO Innova Barcelona, Dry Eye Department and Glaucoma, Barcelona, Spain*

Purpose: To present an unusual secondary effect of plasma rich in growth factor PRGF Endoret® and its management.

Method: A 58 year old female suffering from severe dry eye, non responsive to standard dry eye therapy, started Endoret® (Bti. Spain) eye drops treatment quid. Two days after starting the treatment the patient presented to the emergency room with a red and painful eye.

Examination disclosed severe bulbar and ciliary conjunctival hyperaemia with Oxford 3/3 and lysamine 6/6 stains. Topical treatment with Endoret® was immediately withdrawn and the symptoms subsided rapidly.

We evaluated the manufacturing process of Endoret® and reviewed any other possible etiological factor for the exacerbation of her ocular surface disease.

Results: PRGF analysis disclosed discrete antinuclear antibody (ANA) positivity. ANA could be related to Endoret® triggered hyper-stimulation of the blood complement cascade, which lead to an acute and severe ocular surface disease. The patient improved after Endoret® withdrawal and treatment with hyaluronic acid artificial tears

Conclusion: Taking into account all this data, we decided to add one more step in Endoret® PRGF manufacture process. We introduced a heating step, up to 57 °Celsius for 30 minutes, in order to suppress IgE and complement proteins activity. Currently, this is part of our Endoret® manufacturing protocol, without any further reports of adverse reactions and with optimum results obtained to date.

EP-OCS-416

Clinical efficacy of massage and compression on severe meibomian gland dysfunction

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Purpose: To evaluate the clinical efficacy of massage and compression in managing severe meibomian gland dysfunction

Method: A prospective case series of consecutive severe MGD patients was evaluated for its clinical efficacy. Patients were assigned randomly to receive traditional treatments or eyelid massage and compression combined with traditional treatments. Routine treatments included warm eyelid therapy, tobramycin and dexamethasone eye ointment, and artificial tears eye drops. Additionally, the experimental group received massage and eyelid compressions. Meibomian gland compression was performed by a physician by using a forceps to squeeze the eyelids weekly.

Patients were assigned to inflammatory MGD or non-inflammatory MGD group according to clinical manifestations and case histories. We evaluated eyelid abnormalities, ability and quality of meibum expression, dry-eye-related tests, and the symptom questionnaire.

After 15 days, 1 month, and 3 months of treatment, the abovementioned tests were performed.

Results: After treatment, symptom scores, dry-eye-related tests, and meibomian gland evaluations showed significant improvements in both inflammatory and non-inflammatory groups ($p < .05$). The improvements of the inflammatory group were significantly better than the non-inflammatory group ($p < .05$). For inflammatory group, the symptom scores, dry-eye-related tests, and meibomian gland evaluations of both experimental and control groups did not show significant difference between the two treatments.

Conclusion: Multiple ocular surface diseases may lead to MGD. Traditional MGD treatment was useful for both non-inflammatory and inflammatory MGD. However, massage and compression of the meibomian glands had little effect on inflammatory MGD patients, especially in severe inflammatory cases.

EP-OCS-417

The preliminary effect of the treatment of visual display terminal syndrome related meibomian gland dysfunction with intense pulsed light

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Purpose: To evaluate the clinical efficacy of intense pulsed light (IPL) treatment on visual display terminal syndrome (SDTS) patients with meibomian gland dysfunction.

Method: A prospective case series of consecutive patients with VDTS and related MGD was evaluated for its clinical efficacy. Patients were randomly divided into experimental group and control group, ruled out basic ocular surface diseases, infectious diseases and those with ocular operation history. Bilateral IPL treatment for experimental group combined with eyelid massage and topical application of eye drops. The control group was treated with eyelid massage and eye drops. Respectively observation were done before and after treatment for 1, 2 and 4 weeks, included tear breakup time (BUT), Schirmer I test (SI_t), corneal fluorescence staining, MGD evaluation and subjective symptoms of dry eye (SPEED).

Results: The results of 2 groups were significantly different at each time point after treatment. BUT, MGD evaluation and SPEED score all improved ($P < 0.05$). After 1 and 2 weeks of treatment, differences between the experimental and control groups on above-mentioned 3 items were all significant.

However, after 4 weeks of treatment, the indicators showed no significant between 2 groups.

In addition, after 4 weeks from the first treatment, some patients repeated the IPL treatment. Preliminary findings indicated that BUT, MGD rates and SPEED improvement after 2nd IPL-treatment compared with control group remained significant at the 4th week after the last treatment.

Conclusion: IPL has a better effect than simple massage therapy to the VDTS related MGD, and repeated IPL treatment can prolong the effect of MGD persistence.

EP-OCS-418

A comparative, randomized, double blind, parallel group and non crossover study with alcaftadine eye drops vs olopatadine eye drops in subjects suffering from allergic conjunctivitis

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Aim: To evaluate the efficacy, safety and tolerability of Alcaftadine Vs. Olopatadine hydrochloride eye drop in subjects suffering from allergic conjunctivitis.

Method: The multicentric double blinded study was conducted on 204 subjects (10- 60yr) suffering from ocular itching associated with allergic conjunctivitis. The efficacy of drug was evaluated on primary and secondary parameters.

The primary efficacy parameters were ocular itching and conjunctival redness whereas secondary efficacy parameters were tearing, eyelidswelling, chemosis and eye discharge. Subjects had instilled blinded drugs daily for 14 days and followed on 3rd, 7th and 14th day from start of treatment. At the end of study treatment overall assessment in blinded state done by subjects and investigators.

Results: An overall assessment was done for cumulative data of 204 subjects with 103 and 101 subjects respectively in alcaftadine and olopatadine arm. Following results seen in alcaftadine arm; Itching score improved statically ($p=0.0050$). Conjunctival redness score represents statistically equivalent ($p=0.0351$). For percentage change in tearing score improved when compared from baseline on Visit 2 (Day 3) and Visit 3 (Day 7) ($p<0.0001$). In eye lid swelling score was statistical and clinical superiority when compared from baseline ($p<0.0001$). Percentage change in eye discharge score confirmed the superiority on Day 3 and Day 7 ($p<0.0001$) while marginal superiority on Day 14 ($p=0.0050$). In chemosis score confirmed the superiority on Day 3 and Day 7 ($p<0.0001$) while marginal superiority on Day 14 ($p=0.0075$). Improvement of Allergic conjunctivitis sign and symptoms assessment done by **investigators and subjects** confirms excellent improvement by Alcaftadine (45 cases, 43.7%) & (42 cases, 40.8%) respectively whereas by Olopatadine (36 cases, 35.6%) & (35 cases, 34.6%) respectively. **Conclusion:** For Allergic Conjunctivitis Alcaftadine showed superiority in study outcomes as compared with Olopatadine.

EP-OCS-419

Features of dry eye in patients with subclinical and manifest hypothyroidism

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Purpose: To study the features of dry eye in patients with subclinical and manifest primary Hypothyroidism.

Method: Clinical features of dry eye were studied in 87 patients (174 eyes) with confirmed endocrinological diagnose of primary hypothyroidism in the age from 19 till 78 ($M=50,3$ $SD12,8$) years. Among them were 72 (82,8%) female and 15 (17,2%) male. The subclinical hypothyroidism (SH) was diagnosed in 52 patients (59,1%), the manifest hypothyroidism (MH) - in 36 (40,9%). The etiology of hypothyroidism was in 39 cases (44,3%) autoimmune thyroiditis, in 49 (55,7%) cases- postthyroidectomy. Were analysed: ocular disease surface index (OSDI), Schirmer I test, tear breakup time (TBUT), slit lamp evaluation, severity of dry eye syndrome was graded by DEWS.

Results: The average duration of hypothyroidism was in patients with autoimmune thyroiditis 6,6 $SD8,0$ year, postoperative - 6,9 $SD7,6$ year ($p=0,9$). In patients with the SH the Schirmer I test and TBUT were higher than in patients with the MH and were $9,5 \pm SD5,9$ mm and $6,1 \pm SD5,4$ mm ($p=0,0002$); $5,8 \pm SD 2,2$ s and $5,0 \pm SD 2,0$ s ($p=0,0110$), respectively. OSDI in the subclinical hypothyroidism was significantly lower - $41,5 \pm SD20,3$ points comparing to MH - $52,7 \pm SD 23,0$ ($p=0,019$). Was not found conjunction between primary hypothyroidism type (autoimmune thyroiditis and postthyroidectomy) and severity degree of dry eye ($\chi^2 = 0,289$, $p=0,865$). The 1-st severity degree of dry eye revealed in 15 (30,0%) patients with SH and in 5 (13,5%) - with MH; the 2-nd - in 30 (60,0%) and in 12 (32,4%); the 3-rd - in 5 (10%) and in 20 (54,1%) with SH and MH respectively. By MH significantly frequently observed more severe degree of dry eye ($\chi^2 = 20,22$, $p=0,0004$).

Conclusion: Patients with hypothyroidism need regular ophthalmological examination and observation for timely tear replacement therapy prescription and prevention of keratopathy.

EP-OCS-420

Treatment of corneal neovascularization using anti-VEGF of subconjunctival bevacizumab injection and Argon laser treatment

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Purpose: To evaluate the efficacy and safety of subconjunctival bevacizumab injection and Argon laser in treatment of corneal neovascularisation.

Method: A single centre prospective study was carried out on patients attending the ophthalmology B department of Avicenna University Hospital, Rabat. 36 Eyes having superficial corneal neovascularisation with quiescent eyes satisfying the inclusion criteria were selected and randomly allocated to either Group A: 12 eyes treated by two subconjunctival injections of 0.2 ml of bevacizumab in 15 days.

Group B: 12 eyes treated by a single argon laser session.

Group C: 12 eyes treated by subconjunctival injections of bevacizumab and Argon laser.

The efficacy was noted in terms of area of corneal neovascularisation, status of treated vessels, area of corneal opacity, visual acuity. Follow up visits at 1 week, 1 month, 2 month, 3 month and 6 month after treatment.

Results:

Group A: As compared with the baseline visit, patients exhibited a statistically significant improvement in neovascular area by week 12 and in vessel caliber by 6 month. At the final visit, neovascular area, vessel caliber, and invasion area were reduced by 42,7%. The decreases in neovascular area and vessel caliber were statistically significant. However, There were no significant changes in the secondary outcomes, and there were no adverse events.

Group B: 23.7% of vessels were completely occluded and 76.3% vessels were recanalized. Hence, there was 32.2% reduction in neovascularization area.

5 cases of complications as corneal hemorrhage with exacerbating of neovascularization.

Group C: neovascular area, vessel caliber were reduced by 37,4%.

Comparing the 3 groups, it is noted that the subconjunctival injection of bevacizumab gives the best results without adverse events.

Conclusion: Subconjunctival bevacizumab injection is an effective tool for the reduction of vascularization in quiescent eyes with vascularised corneal opacities.

EP-OCS-421

The damage of ocular surface due to uncontrolled intraocular pressure in neovascular glaucoma

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Purpose: The aim of the study is to show how we can prevent and treat the suffering of the ocular surface to the NVG patients. Patients with NVG generally present with elevated intraocular pressure (IOP) and may experience severe pain.

Ocular surface (OS) is deep affected by high IOP in NVG and can lead to marked mixt conjunctival congestion associated with edematous cornea.

Method: We took in the study a number of 38 eyes from 35 patients with NVG in the stage 3 with angle closure glaucoma, that presented high IOP and impaired ocular surface. The etiology of NVG was diabetic retinopathy, central vein occlusion and anterior ocular ischemic syndrome. The management of neovascular glaucoma in eye with high IOP was medical, laser and surgical.

Results: The ocular surface was damaged in patients that presented IOP between a minimum of 38 mmHg and maximum of 89 mmHg. The main factor in the ocular surface damage in NVG is elevated IOP.

The symptoms that patients presented were: conjunctival congestion in particular perikeratic, epithelial and stromal corneal edema, epithelial bubble, corneal ulcerations. Treatment followed rapid drop in IOP and the restoration and protection of ocular surface: medical treatment with artificial tears, autologous serum, matriceal therapy, liposome therapy, ocular surface bioprotection, antibiotic drops, corticosteroids, nonsteroidal anti-inflammatory drops. Protective treatment, with therapeutic contact lenses. Surgical treatment with amniotic membrane transplant, tarsorrhaphy in complicated cases.

Conclusion: NVG is a very difficult pathology and is very hard to manage. The uncontrolled IOP in NVG patients affect the ocular surface and leads to complications. Uncontrolled IOP is the main risk factor implicated in the suffering of ocular surface. Long-term maintenance of normal intraocular pressure is important in NVG management but also in protecting the ocular surface.

EP-OCS-422

Effect of artificial tear treatment on corneal epithelial thickness and corneal topography findings in dry eye patients

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Purpose: To investigate the effect of artificial tear treatment on central corneal epithelial thickness, central, middle and peripheral corneal thickness and coma, trefoil and total aberrations in dry eye patients.

Method: Sixty-one eyes of 33 female dry eye patients were enrolled in this study. The mean age of the patients was 38,3±5,7 years. After full ophthalmological examination, tear break-up time (BUT) and Schirmer-2 tests were applied. Corneal topography (CT) was performed to investigate the mean central, middle and peripheral corneal thickness values and coma, trefoil and total corneal aberrations. Anterior segment optic coherence tomography (AS-OCT) was performed to investigate central corneal epithelial thickness. Artificial tear treatment was given to all patients. The mean follow-up time was 36,4 ± 3,3 days. At the second visit, these tests were repeated and compared with each other.

Results: The mean tear BUT and Schirmer-2 tests were measured statistically significantly higher after treatment (p=0,000, p=0,000, respectively). Central corneal epithelial and mean middle corneal thicknesses were measured significantly higher after treatment (p=0,001, p=0,02). Changes in central and peripheral corneal thicknesses; coma, trefoil and total corneal aberrations were not statistically significant.

Conclusion: Artificial tear treatment in dry eye patients seems to effect central corneal epithelial and middle corneal thicknesses. Further prospective studies are needed.

EP-OCS-423

Toxicity of povidone iodine to the ocular surface of rabbits

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Purpose: We evaluated the toxicity of 5% (w/v) povidone iodine (PI) applied to the ocular surface of rabbits.

Method: Twenty three white rabbits were divided into four groups; these were a control group and three study groups in which the ocular surface was exposed to PI for different times. In the control group, phosphate-buffered saline (PBS) was applied once, for 10 mins.

In the PI groups, 5% (w/v) PI was topically administered (once) for 1 min, 3 mins, and 10 mins, and then the animals were observed for 7 days. The Schirmer test, Rose Bengal staining, corneal fluorescein staining, and conjunctival impression cytology, were performed on days 0, 3, and 7.

After day 7 the rabbits were sacrificed and conjunctiva and cornea were collected and evaluated by light and electron microscope. Immunofluorescence staining also was performed to detect mucin 5 subtype AC (MUC5AC).

Results: The decrease in goblet cell density (GCD) and histopathological changes of conjunctiva and cornea were more prominent in the 5% (w/v) PI groups than the control group (P< 0.05).

Moreover, these changes were more noticeable when PI was applied for 3 and 10 mins rather than 1 min (both P values < 0.05). Reductions in MUC5AC levels, and histopathological and ultrastructural changes in the conjunctiva, were more prominent in study groups exposed to PI for longer times.

Conclusion: 5% (w/v) povidone iodine caused damage to the ocular surface in a time-dependent manner.

Therefore, excessive PI exposure during ophthalmic procedures could be a pathogenic factor of dry eye syndrome after surgery.

EP-OCS-424

Efficacy and safety of a dual polymer based lubricant eye drops containing hydroxypropyl guar and hyaluronic acid in patients with dry eye disease

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Purpose: To evaluate the clinical outcomes with use of a dual polymer based lubricant eye drops containing hydroxypropyl guar & hyaluronic acid (HPG/HA; Systane™ Hydration) compared to sodium hyaluronate containing eye drops (SH, Hyabak® 0.15%) in management of dry eye disease (DED).

Method: In a multicenter, double-masked, parallel-group, non-inferiority (NI) study, eligible patients with DED were randomized 1:1 to receive HPG/HA (n=50) or (SH; n=49), 4 times daily (QID) for 42 days. The change from baseline (ΔBL) in the Total Ocular Surface Staining (TOSS) score (primary endpoint; NI of HPG/HA established if the upper limit [UL] of the 95% confidence interval [CI] for the least square mean difference [HPG/HA minus SH] was < 2); the ΔBL in Impact of Dry Eye on Everyday Life (IDEEL) treatment effectiveness (TE) and treatment inconvenience (TI) and, the ΔBL in tear film breakup time (TFBUT), at Day 42 were assessed.

Results: Total, 97 patients completed the study; mean age of patients was 59.2 years. At Day 42, the mean (standard error [SE]) Δ BL in TOSS score was -1.16 (0.24) in HPG/HA and -0.92 (0.23) in SH groups; intergroup difference -0.24 (UL of 95% CI= 0.42).

The mean Δ BL in IDEEL scores in the HPG/HA and SH groups, respectively, for TE were 9.62 vs.12.80 (difference -3.18 ; $p=0.4817$) and, TI were -10.32 vs. 2.24 (difference -12.56 ; $p=0.0001$).

There was no notable difference in the Δ BL in TFBUT between the treatments ($p=0.5789$).

During the study, a similar percentage of patients reported ocular adverse events in the two groups (18.0% HPG/HA; 20.4% SH).

Conclusion: The dual polymer lubricant eye drop was efficacious in patients with DED; HPG/HA was non-inferior to SH for change in TOSS score from baseline. Safety profiles were similar with both treatments.

EP-OCS-425

Diagnosics and treatment of severe viral keratoconjunctivitis

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Purpose: To determine the features of the diagnostics and treatment of viral keratoconjunctivitis.

Method: The study included 31 patients with viral keratoconjunctivitis. All patients underwent ophthalmologic examination, PCR tear fluid was done to determine the DNA of HSV, CMV and Epstein-Barr. Local and systemic therapy was carried out in accordance with the examination results.

Results: The disease was characterised by long term inflammation and blurred vision in all cases. Cornea was involved in pathological process in all patients. Multiple punctuates subepithelial infiltrates were defined. Coin-like infiltrates have been detected, subepithelial and under Bowman's membrane 2-4 weeks after the beginning of the disease in 42.6% of the cases. In 10 patients the disease was accompanied by severe eyelid edema and conjunctival chemosis. These changes demanded steroid therapy. PCR analysis revealed mixed infection to be present in most of the cases: adenoviral-54,3%, HSV 1-71,3%, CMV-62,7%, Epstein-Barr virus-12,5%.

Given the results of the PCR, patients underwent local and systemic antiviral therapy. Positive trend was observed only after the prescription of systemic treatment. Recurrence of the disease was observed in 13.8% of the cases within 2 - 3 weeks after treatment. Confluent subepithelial infiltrates with pigment without signs of conjunctival inflammation were defined. This indicated the formation of hormone-dependent form of the disease.

In the other cases, the appointment of low-dose steroid therapy during 1 month helped to avoid the recurrence.

Conclusion: Severe forms of viral keratoconjunctivitis require the tear fluid PCR for diagnosis of mixed infection to be performed and timely etiotropic treatment. Long-term steroid therapy leads to the formation of hormone-dependent forms of the disease. This requires a long and slow decrease of steroid concentrations during 1 month after the initial treatment.

EP-OCS-426

Tear osmolarity of students with contact lenses

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Purpose: To research tear osmolarity changes in high school and university students, who are wearing contact lenses.

Method: In this perspective study, students were divided into two groups according to their educational membership, including only those, who were wearing contact lenses for at least a year constantly. A control group consisted of eyeglasses and contact lens independent students. The tear osmolarity was measured with TearLab Osmolarity System. The results were analyzed with MS Excel and SPSS Statistics 22.0.

Results: Together 79 students were examined, 14 in high school and 21 in university contact lens wearing group. The control group consisted of 15 in high school and 19 in university group. The average age in high school group was 17 years and 24.3 years in university group. The average tear osmolarity in high school contact lens wearers was 300.4 mOsm/L in the right eye and 299.8 mOsm/L in the left, comparing with the control group, where tear osmolarity measurements were 294.5 in the right and 296.6 in the left.

The tear osmolarity in the university age group was 301.5 mOsm/L in the right and 303.7 mOsm/L in the left, comparing with the control group, where the results were following 298.2 mOsm/L in the right and 297.3 mOsm/L in the left. The tear osmolarity difference between the groups was statistically approved with ANOVA Repeated measures analysis.

Conclusion: Study confirms that contact lens carriers in the high school and university age have elevated tear osmolarity, comparing with eyeglasses and contact lens free students.

EP-OCS-427

Management of postadenoviral corneal infiltrates. Clinical and immunological aspects

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Purpose: The purpose of this study is to evaluate results of treatment of post-adenoviral corneal infiltrates (PCI) with topical corticosteroids and 0.05% cyclosporin A, based on local cytokine status.

Method: The study included 42 eyes with PCI in cases of 3 month and more after acute period of adenoviral keratoconjunctivitis. Therapy included Dexamethasone, corneal protectors; artificial tears; Cyclosporine 0,05% for 6 months. Patients were carried out the studying of cytokine gene expression in cultured cells of conjunctival scrapings and determining the content of cytokines before treatment and 4 months after.

Results: Maximum corrected visual acuity before treatment: 0.6 ± 0.15 , in 6 months period: 0.9 ± 0.1 . Corneal condition before treatment: 4 points - 6 eyes, 3 - 20 eyes, 2 - 11 eyes, 1 - 5 eyes; at 6 months: 1 point - 2 eyes, 0 - 40 eyes. Cytokine gene expression before treatment: IFN- α -71%; IFN- β , IL-8 -42%; IFN- γ , IFN- $\lambda 2$ and IL-18 -14%. Cytokines: IFN- α -3,43 \pm 9,07pg/ml, IL-2 - 2,03 \pm 4,96pg/ml, IL-4 -3,69 \pm 1,72pg/ml, IL-6 -2,57 \pm 5,59pg/ml, IL-8 -24,00 \pm 13,30pg/ml.

Cytokine gene expression in 3 months: IFN- α -60%; IL-6, IL-10-40%; IFN- β -30%; IFN- $\lambda 2$, IL-18 -20%; IFN- γ , IL-1 β , -2,-4,-8,-17, TNF- α -10%. The content of cytokines: IL-4 - 5,01 \pm 4,95pg/ml, IL-6 - 2,02 \pm 1,28pg/ml, IL-8 -20,02 \pm 11,97pg/ml.

Long-term use of combined anti-inflammatory therapy with corticosteroids and Cyclosporine A showed an increase of visual acuity and a complete re-

sorption of corneal opacities. The complete suppression of residual antiviral activity was marked. The increasing in IL-4 level, showed the local activation of humoral immunity. Inhibition of the production of IL-2 during treatment indicates the suppression of Th-1-type immune responses.

EP-OCS-428

Diagnostic value of anterior segment optical coherence tomography and ultrasound biomicroscopy in conjunctival nevi

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Purpose: Conjunctival nevi are the most frequently diagnosed primary melanocytic lesions of the conjunctiva. The clinical manifestations are greatly variable which may result in diagnostic difficulties and differential diagnostic confusions. Therefore aims of the present study were: 1) to assess the morphologic features of conjunctival nevi; 2) to delineate the anterior segment optical coherence tomography (AS-OCT) characteristics of these lesions; 3) to compare AS-OCT and ultrasound biomicroscopy (UBM) as diagnostic tools in these alterations and 4) to correlate histological results with the AS-OCT pictures in case of surgically excised nevi.

Method: All lesions were photo-documented. AS-OCT and UBM (over the age of 18 years, depending on the cooperation) were performed. Surgically excised lesions were admitted to histological examinations

Results: In our series of 57 conjunctival nevi, 54.4% were highly pigmented, 15.8% proved to be amelanotic. AS-OCT could detect intralesional cysts in 61.4% of the nevi, while slit-lamp and UBM proved to be less sensitive (40.3% vs. 28.5%). UBM could visualize the posterior margins of all nevi, while AS-OCT proved to be less sensitive with the detection of 89.4% of posterior nevi margins. Thickness of the conjunctival epithelial layer could be measured with AS-OCT in case of subepithelial nevi, while no distinct epithelial layer could be detected in compound and junctional nevi

Conclusion: Superiority of anterior segment optical coherence tomography (AS-OCT) over ultrasound biomicroscopy (UBM) was demonstrated in visualizing internal structures of conjunctival nevi. UBM proved to be a better tool in case of highly pigmented and remarkably elevated nevi. Correlation was found between the histological type of the nevi and the thickness of the epithelial layer covering the lesion

EP-OCS-429

Efficacy and safety of 0.1% Ciclosporin Cationic Emulsion (CsA CE) in patients with severe vernal keratoconjunctivitis

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Purpose: Vernal keratoconjunctivitis (VKC) is a severe recurrent chronic allergic inflammatory disease of the ocular surface affecting mainly children. To assess efficacy and safety of CsA CE BiD and QiD in patients with active severe VKC.

Method: VEKTIS was a Phase 3, double-masked, international (11 countries), vehicle controlled study where patients were randomized to receive CsA CE BID or QID, or vehicle QID during 4 months (M). The primary endpoint (PE) was a combination of mean corneal fluorescein staining (CFS), use of rescue medication (corticosteroids) and ulcer occurrence during 4M. Patients could continue CsA CE BID or QID, if needed, for additional 8M.

Results: 169 children were included. The PE was met with statistical significance by both active groups vs vehicle ($p=0.007$ and $p=0.010$ for CsA CE QID and BID, respectively). CFS, photophobia, tearing, itching, mucous discharge and quality of life questionnaire (QUICK) all significantly improved with CsA CE compared to vehicle ($p<0.05$). CsA CE safety was similar to vehicle, but with higher incidence of instillation site pain.

Follow-up at 8 months suggested maintenance of the beneficial treatment effects observed at M4.

Conclusion: VEKTIS study demonstrated that CsA CE was highly effective on signs and symptoms of active severe VKC and well tolerated.

EP-OCS-430

Time course of antioxidant enzyme activities in mice corneas after the exposure to urban air pollution

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Purpose: The exposure to air pollution leads to adverse health effects at levels that are currently experienced by urban populations, in which oxidative stress is suggested to play a central role. The aim of the present study was to evaluate the antioxidant enzyme activities in mice corneas after the exposure to urban air pollution for 4 weeks.

Method: 8-week-old Balb/c male mice were exposed to urban air or filtered air (control) in an exposure chamber located in a highly populated area of Buenos Aires city. Air particulate matter levels in this area range between 20-60 $\mu\text{g}/\text{m}^3$. The animals were exposed for 8 h/day, 5 days/week, for 1, 2, and 4 weeks during december 2016. The local committee for animal care approved every experimental procedure. Superoxide dismutase (SOD), catalase (CAT), and glutathione peroxidase (GPx) activities were evaluated in corneal lysates. One-way ANOVA following Tukey's *post hoc* test was used for statistical analysis.

Results: The animals exposed to urban air pollution showed an increase in SOD (115%) and CAT (218%) activities after a 1-week exposure ($p < 0.05$ vs control), while GPx activity remained unchanged.

After 2 weeks, exposed mice exhibited an increase in SOD activity (56%, $p < 0.001$), but this level diminished when compared to the 1-week result ($p < 0.001$).

After 4 weeks, SOD and GPX activities were decreased compared to the control group (42% and 34 %, $p < 0.05$) and to earlier time points results ($p < 0.05$). CAT levels returned to control values after 2 weeks of exposure.

Conclusion: The corneas of exposed mice exhibit an increase in enzymatic antioxidant defences after a short exposure, suggesting an early adaptive response to air pollutants. After longer exposures, this antioxidant response is shut-down and could leave the cornea more susceptible to oxidative damage. These results suggest that the corneal antioxidant defences play a central role in the toxicological mechanisms triggered by the exposure to urban air pollutants.

EP-OCS-431

Preoperative versus intraoperative subpterygial mitomycin C injection for prevention of pterygium recurrence

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Purpose: To evaluate postoperative outcome and recurrence rate after primary pterygium excision using preoperative versus intraoperative subpterygial Mitomycin C (MMC) injection.

Method: Eighty-three eyes with primary pterygium were divided into 2 groups.

Group A (35 eyes) was operated upon with pterygium excision 5 min after subpterygial injection of 0.1mL 0.015% MMC in the sameoperative setting. Group B (48 eyes) was operated upon with pterygium excision 1 month after subpterygialinjection of the same amount and concentration of MMC as in group A. Pterygium regrowth over the cornea for 1mm or more was considered as a recurrence.

Results: The mean follow-up was 30.66the reported recurrence rate was 5.7%, while it was 4.2% in group B. No serious postoperative complication-swere reported. There was no statistically significant difference between both groups regarding the recurrence rate as well as the complication rate.

- 4.48 months in group A and 29.5 - 4.3 months in group B. In group A

Conclusion: Both techniques proved to be effective in reducing the recurrence rate after excision of primary nasal pterygium with minimal postoperative complications, with no need of a second surgery for patients in group A.

EP-OCS-432

In vitro and in vivo interactions of Cationorm nanoemulsion with tear lipid films

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Purpose: Cationorm® (CN) cationic nanoemulsion is thought to enhance tear film stability at the ocular surface possibly via effect on tear film lipid layer (TFLL). Thus the interactions of CN with human meibum (MGS) and TFLL *in vitro* and *in vivo* have to be studied in detail. Our goal was to explore the interfacial interactions of CN and MGS *in vitro* and to access how these are involved in the effect of CN on TFLL *in vivo*.

Methods: MGS were collected from 4 healthy volunteers (25-36 [30.75±5.12 SD] years old) and then dissolved in chloroform to a unified 1 mg MGS/ml stock solution. The samples were spread at the air/phosphate buffered saline interface of a Langmuir surface balance to ensure range of MGS/CN oil phase 2D ratios: 50/1, 20/1, 10/1, 5/1, 3/1, 2/1 and 1/1. Films capability to cope with dynamic area changes was evaluated by surface pressure-area compression/expansion isocycles and dilatational rheology studies.

The effect of CN on lipid (MGS and TFLL) films structure was monitored (i) *in vitro* with Brewster Angle microscopy and (ii) *in vivo* with non-contact specular microscopy.

Results: *In vitro* at 20/1-3/1 MGS/CN oil phase ratios CN inclusion resulted in improved spreading, surfactant properties and increased elasticity and thickness of the films. *In vivo* specular microscopy images showed that CN mixed with TFLL in a manner similar to the CN/MGS interactions *in vitro*, and resulted in enhanced thickness and structure of TFLL.

Conclusions: *In vitro* and *in vivo* data complement each other and show that CN exerts long term effects by enhancement of TFLL clinically relevant material properties.

EP-OCS-433

The effect of a nanotechnology-based solution with liposomes, vitamins and aminoacids in the treatment of severe dry eye syndrome

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Purpose: Study of the effect of nanotechnology-based solutions with liposomes, vitamins and aminoacids compared with hyaluronic acid-based artificial tears in the treatment of severe dry eye syndrome.

Method: This prospective, observational study included 60 patients with severe dry-eye syndrome who were randomized into two groups:

Group A- treated (30 patients) who received the novel nanotechnology-based solution with liposomes, vitamins and aminoacids (Lacrisek Ofta Plus- Sooft) 2 drops, 4 times a day, and Group B- controls who received hyaluronic acid 0.15% artificial tears (Blu-Yal, Sooft) 2 drops, 4 times a day.

The follow -up period was of 6 months.

We measured tear break-up time (TBUT), corneal and conjunctival staining and Schirmer's test at baseline and after 1, 3 and 6 months of treatment. The most common symptoms of dry eye syndrome were assessed using Visual Analogue Scale at the same time frames.

Results: After 1 months of treatment the patients of both groups had subjective benefit in the relief of symptoms of dry eye disease; the improvement

continued throughout the follow-up and was greater in Group A at every time frame ($p < 0.05$, for all comparisons). Patients treated with Lacrisek Ofta Plus showed greater improvements in tear film stability measured by tear break-up time (TBUT) and exhibited less conjunctival staining at 3 and 6 month follow-up visit ($P < 0.05$).

We found no statistically significant difference in Schirmer's test values compared with baseline in both groups ($p > 0.05$).

Conclusion: The novel nanotechnology-based solution with liposomes, vitamins and amino-acids produced greater amelioration in symptoms and signs, reduced corneal and conjunctival staining and improved tear film stability compared with hyaluronic acid 0.15% artificial tears in patients with severe dry eye, indicating a greater reduction in disease severity.

EP-OCS-434

Toxicity and pharmacokinetic of tacrolimus cationic nano-capsules for dry eye disease treatment

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Dry eye disease (DED), prevalent in up to 34% of world's population, causes discomfort and damage to the ocular surface. Moderate to severe cases can be treated with cyclosporine A, an immunomodulator similar to tacrolimus (TAC), however TAC is 10-100 times more potent and less likely to cause side effects. The low water solubility of TAC, in combination with the rapid elimination of topical ocular applied drugs, represent the greatest challenges in developing an effective TAC ocular formulation to treat DED. Cationic lipid core polymeric nano capsules containing tacrolimus were evaluated for their safety and pharmacokinetic profile after ocular topical administration.

The suspension of nano-capsules containing TAC (NCT) was prepared by interfacial deposition of preformed polymer method using Eudragit™ RL100 as the polymer. *In vivo* evaluations in rabbits were carried out to assess safety and the pharmacokinetic of the system. Draize test was performed 10 minutes, 24 hours and 48 hours after applying the NCT every 30 min during a 6 hour period. Treated and control eyes were extracted for histology analysis. A LC-MS/MS was used for tacrolimus quantification in humour aqueous (HA). The HA samples were collected at 0.5, 1.5, 2, 4, 8, 12 and 24 hours after instillation of NCT or a suspension of tacrolimus in water.

The Draize test demonstrated no toxicity in rabbits' eyes after slit lamp examination. Histological evaluation showed no abnormality in all eyes analyzed. The pharmacokinetic parameters were calculated and compared between the two groups. The maximum concentration (C_{max}) and bioavailability of the NCT treated group were statistically higher while the time to achieve C_{max} was lower compared to the suspension treated group.

The cationic nano-capsule formulation improved the ocular bioavailability of tacrolimus after topical administration, suggesting that NCT is a potential system for tacrolimus ocular delivery in DED treatment.

EP-OCS-435

Ocular manifestations of Chronic Graft-Versus-Host Disease (GVHD): ocular mucous membrane pemphigoid *Drelichman V.*

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Introduction: the Graft-Versus-Host Disease (GVHD) is a frequent complication in the transplant of allogenic hematopoietic stem cells transplantation (HSCT). Depending on the moment of apparition it is classified as: subtle (GVHD ag), the lesions appear in the first 100 days of HSCT and chronic (GVHD cr), the lesions appear after 100 days. In GVHD cr various organs are compromised: dermic, gastrointestinal, hepatic, pulmonary and ocular (dry eye).

Purpose: report follow-up and response to treatment of a patient with compromised ocular: mucous membrane pemphigoid caused by GVHD

Method: Patient of 47 years with diagnosis of subtle mieloblastic Leukemia (2011). In July of 2012, presented medullar downfall. In December 2012 undergoes HSCT allogenic with compatible brother. At day +116 (April 2013) begins symptoms of GVHD cr with compromise of skin, hepatic, and ocular (ocular pain and photophobia).

Results: Ophthalmologic evaluation (2013): VA: 7/10 Photophobia and ocular pain. Biomicroscopy: Mixed injection, corneal erosions, and corneal ulcer in both eyes. BUT 2"; subscapular posterior cataracts 2 xx. IOP: 12. Eye fund: Optic nerve of pink and net borders normal macula. With diagnosis of severe dry eye, the patient is started on treatment of a local immunosuppressive: topical cyclosporine, gel tears, collagen punctug plug at 4 points of tear. According to the abnormal ocular response biomicroscopy shortening of the back of inferior sack, the patient is diagnosed with Ocular mucous membrane pemphigoid status II of Foster, the immunosuppression is changed to Methotrexate 15 mg a week by mouth and topical tacrolimus ointment 0.03%, autologous serum, Vitamin A in ointment. After 3 years of follow-up it is not found that the disease is evolving.

Conclusion: the compromised ocular of GVHD cr is difficult to manage. With 3 years of follow-up the local immunosuppression accomplished a good response and stabilization with respect to the pathology.

EP-OCS-436

A preclinical study evaluating the effect of a new phospholipid nanoemulsion based artificial tears formulation

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Purpose: Tear lipid layer deficiency is a major cause of dry eye disease (DED) and supplementation of lipids in a nanoemulsion can improve lipid layer thickness and tear film stability. We evaluated novel nano droplet-lipid based artificial tears containing hydroxypropyl-guar (HPG), anionic phospholipid, mineral oil, and demulcent propylene glycol in corneal epithelium models.

Method: Cell proliferation assay evaluated the % protection with HPG/nanoemulsion vs vehicle i.e. nanoemulsion without HPG; (n/group=33-38 [hydration assay], 63-73 [desiccation assay]) in human corneal epithelial cells. Sodium fluorescein permeability assay assessed the ability of HPG/nanoemulsion to protect and promote cell barrier function recovery following damage (n=18/group).

Solutions were tested by measuring effects of 5, 6-carboxyfluorescein permeability on the corneal epithelium of intact rabbit eyes (n=5/group). Lubricity was assessed using a coefficient of friction experiment with pericardium tissue (n=3/group).

Results: Hydration protection against desiccation (39.5% vs 0%) and cell protection by surface retention after rinse (32.6% vs 0%) was significantly greater with HPG/nanoemulsion vs vehicle ($p<0.05$).

Post 48-hours in normal medium, barrier function of HPG/nanoemulsion treated cells post benzalkonium chloride (BAC) treatment returned to control levels relative to the vehicle.

Fluorescence (mean \pm SD), 30 mins after BAC exposure, was 3.11 ± 0.4 in vehicle and 2.66 ± 0.2 with HPG/nanoemulsion ($p<0.05$).

Fluorescein permeability (ng CF/g) in rabbit corneas following HPG/nanoemulsion treatment relative to BAC exposure was 9.57 vs 22.59; $p<0.05$. HPG/nanoemulsion demonstrated greater lubricity in pericardial tissue samples vs vehicle ($p<0.05$).

Conclusion: HPG/nanoemulsion provided effective moisture retention, protection, and improved cell barrier function than vehicle. This formulation may reduce ocular surface damage and replenish the tear lipid layer in DED patients.

ELECTRONIC POSTER PRESENTATIONS OCULOPLASTICS

EP-OPL-438

A novel method to measure the biomechanical property of orbital soft tissue using a corneal dynamic scheimpflug analyzer

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Purpose: A dynamic scheimpflug analyser (Corvis ST, Oculus, Wetzlar, Germany) is a instrument for biomechanical property of cornea. In this study, we will present that Corvis can measure biomechanical property of orbital soft tissue by comparing the eyeball movement in healthy subject group and thyroid ophthalmopathy group whose orbital soft tissue are expected to be changed.

Method: This study included 78 eyes of 44 healthy subjects and 52 eyes of 28 thyroid ophthalmopathy patients. After Corvis ST test, we analyzed the movies and measured the eyeball movement by air puff with ImageJ. We calculated the average and standard deviation of eyeball movement in healthy subjects. We performed correlation analysis between age and eyeball movement and compared the eyeball movement between male and female in healthy subjects. We performed correlation analysis between eyeball movement and exophthalmometry, proportion of extraocular muscle in orbit CT and stage of thyroid ophthalmopathy.

Results: The mean eyeball movement was 485 ± 124 μ m and it increased according to age in healthy subjects group (Spearman rho $r=0.418$, $p=0.000$). The eyeball movement was 423 ± 121 μ m in 24 eyes of men and 513 ± 117 μ m in 54 eyes of female ($p=0.003$). The eyeball movement in thyroid ophthalmopathy was 368 ± 128 μ m and showed a significant difference ($p=0.000$) from that of healthy subjects group. In thyroid ophthalmopathy, the eyeball movement didn't show significant relations with exophthalmometry or stage of thyroid ophthalmopathy ($p=0.298$, $p=0.372$).

But, the eyeball movement showed significant negative correlation with proportion of extraocular muscle in orbit CT ($R=-0.382$, $p=0.018$).

Conclusion: The eyeball movement measured by Corvis was larger in old age and female subjects than young and male subjects. In thyroid ophthalmopathy patients, the eyeball movement was smaller than those in healthy subjects group. These eyeball movement can be used to measure orbit biomechanical property.

EP-OPL-439

Revision dacryocystorhinostomy

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Purpose: Nasolacrimal duct obstruction is a very prevalent pathology and dacryocystorhinostomy (DCR) remains its standard treatment. It can be performed through external or endonasal approach, both with high success rates. The most frequent cause of DCR failure is fibrosis leading to occlusion of the nasal ostium. The purpose of this study is to review the cases of revision DCR comparing success and failure rates, complications and causes of failure with those described in the literature.

Method: Retrospective analysis of revision DCRs performed by the same surgical team between June 2010 and February 2016 with a minimum follow-up time of 6 months. Mitomycin C (MMC) 0.02% was applied for 5 minutes in all procedures. Surgical success was defined as absence of epiphora at 6 months postoperatively, with a positive endoscopic fluorescein test. Causes of failure, complications and additional interventions were reviewed.

Results: 36 revision DCRs (21 endoscopic and 15 external) were included with an overall success rate of 94.4% (95.2% for the endoscopic approach and 93.3% for the external approach). Surgical failure was observed in 2 cases, both due to fibrotic ostium occlusion. Additional procedures were performed in 8 cases: 7 septoplasties and 1 bullous concha excision. Mean follow-up time was 10.5 months.

Conclusion: Our revision DCRs' success rate is higher than those described in previous studies. No statistically significant difference was found between success rates of the endonasal and external approaches. Careful preoperative evaluation, an experienced multidisciplinary surgical team and a consistent surgical technique with antifibrotic use and complete removal of scar tissue may contribute to these results.

EP-OPL-440

Correction of the adult involutional lower eyelid ectropion with the modified resection technique- our experience

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Purpose: There are many types of the lower eyelid ectropion, and many surgical techniques are used for the correction. The purpose of this paper is to present our experience with the modification of the standard techniques in the involutional ectropion surgery.

Method: A retrospective study was done in Center for Plastic Surgery, Clinical Centre "Kragujevac", Kragujevac, Serbia, during the last 9 years. Modification of the resection technique included separate horizontal incision

in the medial third of the eyelid and placement of the resected skin as a FTSG. The length of the incision was equal to 2/3 of the vertical dimension of the resected rectangle, 5 mm apart from the lid margin. The base of the skin rectangle was placed medially. In the cases of severe ectropion, reinsertion of the retractors to the lower border of the tarsus was performed.

Results: 67 patients, aged 57 to 83 (mean 72.27) of both sexes (female 58.21%) were operated on by the same surgeon. Bilateral surgery was performed in 23 patients. In 43 patients retractors correction was done. Follow-up period was up to one year.

There was no overcorrection, recurrence or other common surgical complication. Functional and aesthetic results were acceptable.

Conclusion: We consider that the modified technique we have described is suitable for ectropion correction, it is logical, because we save and use the tissue, but it requires basic skills of plastic surgery and leaves additional scarring, which is not much visible.

EP-OPL-441

Argon laser treatment of benign eyelid lesions: a prospective study

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Purpose: To evaluate the outcomes of argon laser-assisted therapy for benign eyelid lesions.

Methods: Prospective non-randomized study of consecutively selected patients with benign eyelid lesions removed using photocoagulation (argon laser) under topical anesthesia. Eyelid margin was involved in 15% of the cases and 5% were within 1 mm of the inferior lacrimal punctum. Eyelid lesions were classified according to biomicroscopic evaluation. An emulsion of lidocaine and prilocaine was used for dermal analgesia and subcutaneous injection of 2% lidocaine was performed as needed. Patients were instructed to apply oxytetracycline ointment twice daily for one week to aid wound healing. Patients were observed on days 15 and 45 in order to assess time of wound healing, post-operative complications, need for additional treatment and satisfaction regarding the cosmetic result.

Results: One-hundred and one lesions of 66 patients were included with a mean age of 55,4 (range: 14 to 86). All patients were Caucasian and 62% were female. Papilloma was the most common lesion identified (62%). Subcutaneous lidocaine was administered in 26% of all cases and no complications were reported during the procedure. Total epithelization occurred in 82% and 100%, at the 15 and 45-day visit respectively.

No post-operative complications were noticed namely cutaneous retraction, wound infection and altered pigmentation.

All patients were satisfied with the cosmetic result and there was no need for additional therapy.

Conclusions: Our study demonstrates the effectiveness and safety of a cheap and widely available therapeutic option for the removal of benign eyelid lesions, supporting argon laser-assisted treatment as an excellent alternative to conventional surgery.

EP-OPL-442

Superior orbital vein thrombosis with complete loss of vision as complication of autoimmune and infective conditions

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Purpose: to present two different cases of superior orbital vein thrombosis with complete unilateral loss of vision

Method: two patients with septic and aseptic superior orbital vein thrombosis are presented. Clinical characteristics, radiographic features, management techniques and outcomes are described

Results: in the first case, thrombosis occurred as complication of functional endoscopic sinus surgery. In the second case thrombosis occurred as complication of untreated inflammatory bowel disease - ulcerative colitis. Both cases resulted with permanent unilateral blindness.

Conclusion: superior orbital vein thrombosis is rare entity. There are no guidelines for disease management. Broad-spectrum intravenous antibiotic, anticoagulation and steroid therapy should be promptly introduced and if needed surgical intervention should be employed. Still, the condition can result with devastating complications as permanent loss of vision and in some cases with fatal outcome.

EP-OPL-443

Effect of superior blepharoplasty in tear film - objective evaluation with keratograph 5M

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Purpose: Evaluate the effect of superior blepharoplasty in tear film, using corneal topographer Keratograph 5M.

Methods: Prospective study of 27 eyes of 14 patients with superior dermatochalasis, submitted to superior blepharoplasty, between May and June 2016. Conservative upper eyelid blepharoplasty was performed by using an en-bloc resection of anterior lamellar tissue that included skin, subcutaneous tissue and orbicularis oculi muscle. All eyes were imaged using the noninvasive Keratograph tear breakup time (NIKBT) tools of Keratograph 5M. The following parameters were recorded in each patient before surgery and 6 weeks after surgery: NIKBT-first (time at which the first breakup of tears occurs) and NIKBT-average (average time of all breakup incidents). Exclusion criteria: ophthalmological pathology, previous eyelid surgery, use of eye drops, systemic pathology and/or medication that interferes with lacrimal tear.

Results: Mean age of patients was 65,1 years (51-84). Gender distribution was 85,7% females. The values for the first breakup time (NIKBT-first) evaluated before and after surgery were not statistically significantly different (9,04 e 8,71, respectively; $p=0,926$).

The values for the average breakup time (NIKBT-average) evaluated before and after surgery, were also not statistically significantly different (13,01 e 13,14, respectively; $p=0,835$).

Conclusions: Superior blepharoplasty doesn't affect lacrimal tear, respecting to the objective evaluation of BUT with Keratograph 5M.

EP-OPL-444

Thyroid orbitopathy: two different stages of the disease*Lopes A.S., Silva D., Vendrell C., Santos M.J.**Hospital Prof. Doutor Fernando Fonseca, Ophthalmology, Lisbon, Portugal*

Purpose: Describe two clinical cases of thyroid orbitopathy with different forms of presentation and treatment, associated with different stages of the disease.

Method: Two clinical cases are presented as the form of presentation of the disease, the clinical manifestations and evaluation, as well as the exams performed and the therapeutic approach.

Results: One clinical case was presented as in the active or inflammatory stage of the disease, performed medical treatment with methylprednisolone and maintained clinical surveillance. The other case was presented as in the inactive or fibrotic stage with impact in the patient's quality of life and performed surgical treatment (orbital decompression and strabismus correction). Both cases had symptomatic, aesthetic and functional improvement.

Conclusion: Depending on the stage presentation, clinical manifestations and therapeutic approach can be variable. Early diagnosis is essential for appropriate and fast treatment in order to avoid serious consequences.

EP-OPL-445

The clock is ticking! Retrobulbar hemorrhage*Barros S., Parreira S., Lopes D., Marques N., Pereira M., Campos N.**Hospital Garcia de Orta, Centro de Responsabilidade de Oftalmologia, Almada, Portugal*

Purpose: Retrobulbar hemorrhage (RBH) is a rare ophthalmological emergency that can occur in the setting of trauma or orbital surgery. Stretching of the optic nerve and/or compromise of ocular perfusion lead to blindness in 50% of cases. We present a case of RBH secondary to ocular trauma.

Method: Clinical case and management approach of a patient presenting with RBH. Ophthalmological observation, surgery description, pre and post operative CT scans and final retinography and SD-OCT were obtained. Literature was reviewed.

Results: 78 year-old male with type 2 diabetes, ischemic heart disease, treated with clopidogrel, presented with ocular pain after having had a fall 12h before. Observation revealed right eye (OD) proptosis and massive periorbital hematoma. Ocular movements were restricted in all fields of gaze. Visual acuity (VA) was no light perception (NLP) in OD, 20/25 in left eye (OS). OD had an absolute pupillary defect. External eye examination showed diffuse conjunctival hemorrhage. Fundoscopy was impossible due to hematoma. CT scans confirmed the diagnosis: intraconic retrobulbar hematoma predominantly involving its inferonasal location, stretching the optic nerve.

Urgent lateral canotomy with cantholysis and hemorrhage decompression was performed. Despite successful intervention with reduction in RBH volume and good anatomical recovery of intraconic structures according to follow-up CTscan, the patient developed optic atrophy and final VA remained NLP.

Conclusion: Despite an estimated prevalence of less than 0,1%, RBH can be a blinding condition with major impact in patient's quality of life. Vision loss is mainly due to delayed treatment, which should be performed within 2 hours to prevent permanent damage.

This case highlights the severity of RBH. Despite attempted treatment, the length of time since the patient got injured and came to observation, may have contributed to the poor prognosis. Clopidogrel may have further aggravated the hemorrhage.

EP-OPL-446

The use of a mesh implant for the surgical treatment of paralytic ectropion of the lower eyelid*Lebedeva P., Sitnik H.**Belarusian Medical Academy of Postgraduate Education, Minsk, Belarus*

Purpose: To evaluate the clinical results of surgical treatment of paralytic lower eyelid ectropion using mesh implant.

Method: The study included 41 patients (41 eyes) with paralytic lower eyelid ectropion and lagophthalmos, who underwent lower eyelid plasty with the use of the partially resorbable mesh implant (50% - prolene, 50% - monocryl, the pore size of at least 3mm) during the period from 2013 to 2016. They were: 18 men(43.9%) and 23 women (56.1%), mean age 58.9±2.2 years. The paralytic lower eyelid ectropion was moderate - in 13 (31.7%), severe - in 28 (68.3%), patients. Paralysis was caused by previous acoustic neurinoma resection in most of the cases (48.8%). Lagophthalmos value ranged from 4 to 14 mm. Cornea was involved (exposure keratitis, corneal ulcers, corneal perforations) in 32 (78.1%) cases. BCVA varied from 20/200 to 20/20 in 30 (73.2%) patients.

Results: During the follow-up period (from 9 to 28 months) the position of the lower eyelid was stable in all cases. The mean value of lagophthalmos reduction was 7.6 ± 1.32 mm. 6 (14.6%) patients had an extrusion of single fibers of a mesh implant that demanded repeated suturing. Corneal status improved in 33 (80.5%) cases. 14 (34.2%) patients subjectively qualified the results of surgery as "excellent", 26 (63.4%) - as "good" and 1 (2.4%) - as "satisfactory". The cosmetic outcome was estimated by patients as "good" in all cases.

Conclusion: The use of the mesh implant in surgical reconstruction of a lower eyelid provide the stability of correct eyelid position and helps to reduce the grade of lagophthalmos and tearing.

All of the above suggests that it is possible to consider the method of lower eyelid reconstruction using a mesh implant effective.

EP-OPL-447

Medial canthal reconstruction after large tumor resection*Mogilnicki L.**GH Novo mesto, Ophthalmology, Novo mesto, Slovenia*

Purpose: Use of blepharoplasty transpositional flap for medial canthal reconstruction.

Method: We excised a large medial canthal tumor, drilled a bone and prepare it for later Jone's tube placement, suspended medial canthus on periost. For skin reconstruction we used transpositional flap from blepharoplasty.

Results: Suitable esthetic and functional result with great patient satisfaction.

Conclusion: Blepharoplasty transpositional flap could be one of the first options for peri-upperlid reconstructural sites.

EP-OPL-448

The efficacy of preoperative nasolacrimal syringing with 2% lidocaine in nasolacrimal intubation surgery*Lee K.**Konyang University Hospital, Ophthalmology, Daejeon, Republic of Korea*

Purpose: Nasolacrimal intubation with silicone tubing without performing a dacryocystorhinostomy is often indicated in patients with nasolacrimal duct stenosis or functional nasolacrimal duct obstruction. The authors assessed the preoperative canalicular and nasolacrimal duct anesthesia with nasolacrimal syringing with 2% lidocaine during nasolacrimal intubation surgery.

Methods: This was a double-blind, randomized, prospective, comparative study. Patients who underwent bilateral nasolacrimal intubation surgery under local anesthesia were asked to report pain scores for each eye during the operation. Each patient was randomly assigned to receive nasolacrimal syringing with 2% lidocaine in 1 eye, and nasolacrimal syringing with normal saline in the other.

Results: Thirty-six patients (15 males, 21 females, mean age = 63.9±9.9) were included. The pain score was significantly lower in patients who received nasolacrimal syringing with 2% lidocaine (5.25) than in patients who received with normal saline (6.5, $p=0.005$, student's *t* test).

Conclusion: Preoperative nasolacrimal syringing with 2% lidocaine seemed to reduce intraoperative pain during nasolacrimal intubation surgery with silicone tube.

EP-OPL-449

Schneiderian papilloma arising from lacrimal sac: case report and review of the literature*Zhou W.¹, Yip C.C.^{1,2}**¹Tan Tock Seng Hospital, Ophthalmology, Singapore, Singapore,**²Khoo Teck Puat Hospital, Ophthalmology & Visual Science, Singapore, Singapore*

Purpose: To describe an unusual presentation of a Schneiderian papilloma arising from the lacrimal sac and review the existing literature on Schneiderian papillomas which originate from the lacrimal drainage apparatus (LDA).

Methods: Case report and review of 7 published case reports and 2 case series of Schneiderian papillomas arising from LDA identified through literature search.

Results: A 45-year-old male presented with chronic epiphora, recurrent discharge from the right eye and painless swelling in the right medial canthal area. Computed tomography (CT) of the orbit showed right-sided enhanced soft-tissue attenuation filling the lacrimal sac extending through the lacrimal duct to the middle meatus of the right nasal cavity without bony erosion or infiltration of the soft tissue. Pathology following endoscopic dacryocystorhinotomy (DCR) and biopsy of the lacrimal sac mucosa revealed the presence of a Schneiderian papilloma with both exophytic and inverted growth pattern. Further right-sided dacryocystectomy, lateral rhinotomy and medial maxillectomy were performed twice to remove the recurrent papillomas in the LDA and nasal cavity. No more recurrence was detected during the follow up of 10 months. The histopathological evaluation confirmed the recurrent papilloma was inverted papilloma (IP). Clinical features, therapeutic approach and outcomes of other cases reports and case series were reviewed.

Conclusion: The lacrimal system is one of the most unusual primary locations of Schneiderian papilloma. However, the importance of including Schneiderian papilloma, a benign but invasive neoplasm, in the differential diagnosis of nasolacrimal duct obstruction should be addressed. Early and

complete resection of the tumor with wide margin clearance is necessary to prevent recurrence and/or malignant transformation. Long term follow up is mandatory in patients with Schneiderian papilloma of the LDA.

EP-OPL-450

Continuous suture relaxation complication at 85 years old woman with bilateral blepharoplasty*Kalaycı M.**Gazipasa Devlet Hastanesi, Göz Plk., Antalya, Turkey*

Purpose: To report 1 case of continuous suture relaxation complication at 85 years old woman with Bilateral blepharoplasty.

Method: A 85 years old woman was admitted to perform bilateral blepharoplasty surgery. She had redundant upper eye lid skin without orbital fat.

Results: After 3 days of the surgery we saw the relaxation of the continuous suture on the left upper eye lid. She had diabetes mellitus type 2. Then we put an only 1 suture where it had relaxed.

Conclusion: In elderly people who are over 80 years old, we should be careful and awake after upper eyelid surgery. Because they have often with some chronic systemic disease and the wound healing may lengthen as per young people.

EP-OPL-451

New technique of evisceration with allogenic graft*Barash A.^{1,2}**¹Gomel State Medical University, Gomel, Belarus, ²Gomel Regional Clinical Hospital, Gomel, Belarus*

Purpose: The purpose of our research is to create new effective surgery - removal of an eye ball for prophylactic eye socket syndrome.

Method: Evisceration with implantation in a cavity of the fibrous capsule of an eyeball of an implant, is a method of choice as provides the good mobility of socket and provide cosmetic and rehabilitation effect. The second part of successful prosthetics and good cosmetic effect is the right choice of an implant. There are many orbital implant materials used for this surgery in literature but in Republic of Belarus the choice of orbital implants is still not sufficient, it is connected with the high price and the absence of the license for purchasing them or licensing dealer chain companies. According to the data available in the literature allogenic graft from adipose tissue of a sole has proved itself to be good, as it possesses a low antigenicity, ability to biointegration, good tolerance and migration, prevents scarring. It is economic and widely available.

Results: We offer a new modification of evisceration with orbital implant surgery. First of all this method provides engraftment orbital implant due to the creation of effective vascular net for the vascularization of a socket. Application as an implant of an allogenic graft from adipose tissue of a sole and a developed technique of forming of an eye socket allows to make individual ocular prosthetic, to prevent migration, rejection, and infection of an implant. Besides this biomaterial is generally available and doesn't require additional economic costs. The developed technique of evisceration with orbital implant surgery provides natural topography of socket creating a spheroid shape of its front surface for the best contact with a back surface of an artificial eye.

Conclusion: The developed technique of evisceration with allogenic graft from adipose tissue of a sole provides high cosmetic result and increase quality of life patients after eye removal surgery.

EP-OPL-452

Ballon dacryocystoplasty for treatment of congenital nasolacrimal duct obstruction after failed probing

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Purpose: To assess the outcome of balloon dacryocystoplasty (DCP) to treat congenital nasolacrimal duct obstruction in children in who had failed previous lacrimal probing.

Method: We reviewed the results of the DCP procedure in 16 lacrimal systems in this retrospective study. 14 pediatric patients with congenital nasolacrimal duct obstruction, in who had failed at least two previous probings were included. Patients ranged from 2 to 10 years of age (mean: 5)

Results: The procedure was successful in 62,5% of the cases. Successful outcome was defined as a complete resolution of signs and symptoms of epiphora and a negative dye disappearance test. The mean follow-up period was 26,62 months. There were neither complications nor side effects in any of our patients.

Conclusion: Balloon dacryocystoplasty is a safe, simple and effective procedure for congenital nasolacrimal duct obstruction following previous failed probing. It should be considered a good rescue option in children before resorting dacryocystorhinostomy.

EP-OPL-453

Levator resection - the optimum choice method in congenital blepharoptosis surgical treatment

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Purpose: To analyse the results of different forms of congenital blepharoptosis surgical correction with usage of dosated levator resection method.

Method: 826 children (883 eyes) aged 2-18 years with different forms of congenital blepharoptosis were operated on using the dosated transcutaneous levator resection. Non-complicated blepharoptoses were observed in 73,7 % of cases. Blepharophimosis syndrome (BPES) was diagnosed in 18,2 %, ptoses complicated by ophthalmoplegia - in 4,4 %, synkinesias - in 3,7 % cases. The transcutaneous levator resection was used as a method of surgical correction in all cases. In BPES the levator resection was supplemented with resection of hyperplastic part of the tarsus, shortening of medial canthal ligament and extensive skin plasty of inner canthus. The level of resection was traditionally determined by blepharoptosis degree and levator function and also by anatomical features of eyelid structures.

Results: Good and stable cosmetic results - blepharoptosis elimination, symmetrical eye fissure and palpebral fold, were achieved in 96,9% of non-complicated blepharoptosis, in 91,9% of BPES, in 79,1% of synkinesias, in 73,5% of ophthalmoplegia. Functional result, consisted in intensification of poor preop levator function and it appearance in the case of the initial lack of function, was marked in non-complicated blepharoptoses and BPES.

Conclusion: Levator resection has a number of important advantages in comparison with other surgical methods: high efficacy, pathogenetic orientation, as surgical intervention performs directly on pathologically changed structure, possibility of levator function improvement. The achieved results give the possibility to conclude, that levator resection is the optimum method of choice in different forms of congenital blepharoptosis surgical treatment.

EP-OPL-454

Rate of eyelid reconstructive surgeries in specialized eye hospital for ten years' period

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Purpose: To analyze how many and which types eyelid surgeries were performed in Specialized Eye Hospital for period of ten years.

Method: It was a retrospective study for ten years, from 2006 to 2015. Information about patient's diagnosis, type of surgery and demographic characteristics were obtained from patient's records and surgical journals.

Results: For ten years 1336 eyelid surgeries were performed, it was 5.8% from total number of surgeries in the Specialized Eye Hospital. The mean age of the patients was 46,2 years (from 1 to 92). Males were 58,6% and females - 41,4%. The most often cause for surgery was trauma in 30,5% of cases, followed by benign tumors - 26,7%, malignant tumors - 11,6%, entropion - 11,1%, ectropion - 8,6%, ptosis - 6,7% and dermatochalasis -4,8%. The most often used surgical procedure for entropion repair was Quickert surgery (horizontal shortening with lower eyelid retractors reattachment) in 54% of cases, for ectropion repair - horizontal shortening with wedge excision in 60%; for eyelid reconstruction after malignant tumor excision - direct closure in 54,2% of cases, skin flap transposition - 16,8%, Hughes plastic - 14,2%, full thickness skin graft - 13,5% and Cutler-Beard procedure - 1,3%.

Conclusion: The most often cause of eyelid surgery in this study was tumor excision. Benign tumors were twice more often than malignant. In cases with involuntional eyelid malposition, entropion was the most often reason for surgery. Surgical procedures used provided very good functional and aesthetic results.

EP-OPL-455

Case report: vascular malformation in the periorbital region

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Purpose: To report a case of a vascular malformation in the periorbital region, treated neurosurgically.

Method: A 48 year old man was admitted, who have had a periorbital vascular malformation from his childhood, treated by various neurosurgical techniques.

Results: On the right side of the 48 year old man's forehead a pulsatile mass had appeared at his age of 7-10, which became bigger and bigger. In 1986, a vascular malformation was described, which was saturated by the right external carotid artery and was removed surgically after the ligation of this artery. In 2015, the patient returned with a pulsatile, slowly growing, frontotemporal, soft, reddish lesion with palpable thrill. The mass reached the upper eyelid and made the palpebral fissure smaller causing visual field defect. At the Department of Neurosurgery the angiography revealed the ligated external carotid artery. This occlusion causing a huge collateral circulation through the internal carotid artery (from the ophthalmic artery and the cavernosal part of the internal carotid artery) which ensured the blood supply to this craniocervical arteriovenous malformation and the large size aneurysm as well. During angiography, the fistular part of the malformation was embolized by a special liquid polymer, resulting a total occlusion of the lesion. The polymer was

removed after 2 months by a plastical surgeon. After the total recovery the upper eyelid had been elevated, resulting a good visual function. The visual field completed to the normal limits. The pulsation of the lesion was no more palpable.

Conclusion: The arteriovenous malformation of the periorbital region can be treated safely with a good estetical result.

**ELECTRONIC POSTER PRESENTATIONS
ONCOLOGY AND PATHOLOGY**

EP-ONC-458

Pathology and genetics of uveal melanoma extrascleral growth

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Purpose: Analysis of tumor extrascleral growth association with pathologic and molecular genetic changes in patients with uveal melanoma (UM).

Method: We examined and treated 134 patients with uveal melanoma at the age of 22 to 84 years. The average height of the tumor was 9.2 ± 2.9 mm, basal diameter 15.3 ± 3.5 mm. In 97.8% of cases enucleation of the affected eye was performed. Histological tumor types were spindle-cell ($n=61; 45.6\%$), mixed ($n=46; 34.3\%$) and epithelioid ($n=27; 20.1\%$). 12 cases of extrascleral growth were determined. PCR-RFLP analysis revealed full and partial monosomy of chromosome 3, deletions of the short arm of chromosome 1 and RASSF1A gene methylation ($n=134$).

Results: We identified a topographic association of the tumor invasion zone with the biggest area of exit of vessels from sclera: anterior and posterior segment. Tumors in the posterior segment present broad ingrowth, anterior segment tumors by contrast ingrow as thin layers. Two types of tumor invasion terminations are determined:

- 1) forming a node and
- 2) tumor cells dissemination on the sclera.

Tumor cells in the extrabulbar node differ from the primary lesion due to their atypism. Significantly lower rate (33.3% vs 47.9%) of UM spindle cell type in the group with extrascleral growth is shown. The frequency of full or partial chromosome 3 monosomy in the group with extrabulbar tumor growth was significantly higher (92% vs. 50.4%).

Conclusion: A statistically significant number of patients with UM showed favorable tumor prognosis in the spindle cell tumor type and negative prognosis when detecting monosomy of chromosome 3, which correlated with the extrascleral tumor growth.

EP-ONC-459

The analysis of RASSF1A and SEMA3B tumor suppressor genes CPG-islands methylation status in uveal melanoma patients

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Purpose: Analysis of frequency of promoter regions methylation in tumor suppressor genes *RASSF1A* and *SEMA3B*, association with UM progression.

Method: In scope of our work we use for studying 30 patients with histologically proved diagnosis of UM. In all cases, enucleation of the affected eye was performed. DNA was isolated by standard phenol-chloroform extraction method. The methylation of *RASSF1A* and *SEMA3B* genes promoter regions were determined by methyl-sensitive restriction analysis.

Results: We showed high frequency of CpG-island methylation in *RASSF1A* gene -26.7% - in tumors compared with histologically normal of choroid tissue - 3.3% - ($p = 0.026$). A statistically significant correlation of *RASSF1A* gene promoter region methylation with the most favorable spindle morphological UM subtype ($p = 0,049$), decreased tumor height ($p=0,018$) and also with reducing acoustic density in the apex of the tumor by ultrasound duplex scanning results ($p = 0,05$) were also shown. No methylation of the *SEMA3B* gene promoter region in all cases was determined.

Conclusion: Our findings show the important role of RASSF1A gene promoter region methylation to be good prognostic factor for development of UM. The role of SEMA3B gene promoter region methylation in UM development is not confirmed.

EP-ONC-460

Loss of heterozygosity on chromosomes 1, 3 and 8 in uveal melanoma patients

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Purpose: The aim of the present paper was the study of LOH on chromosomes 1,3 and 8 in uveal melanoma and their correlation with clinical and morphological characteristics of the tumor.

Method: The analysis of allelic deletions in chromosomes 1, 3 and 8 were carried out in 38 samples obtained from Central Russia region patients. All tumors were histologically verified.

Results: In the LOH on chromosome 3 analysis we revealed complete monosomy in 8 cases out of 38 (21%). Furthermore, we have shown that LOH is also detected in at least one of the 11 loci studied chromosome 3 in 57.9% (22/38) of cases, including in FHIT (D3S4103-D3S1481, 3p14.2) in 5 cases of 22 (22.7%). The frequency of loss of heterozygosity at the locus 1p36.22 was 28.9% (11/38), at loci 8p12-p22 - 21% (8/38). In 9 of the 11 cases with LOH in locus 1p36.21-22 we observed LOH also on chromosome 3 ($p = 0.03$). Also, all the cases of LOH on chromosome 8 are accompanied by allelic loss on chromosome 3 ($p = 0.018$).

Conclusion: We studied the frequency of allelic deletions in chromosomes 1, 3 and 8 samples in UM. The critical role of the studied chromosome aberrations in UM is shown.

EP-ONC-461

Bone marrow involvement of primary ocular adnexal lymphoma

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Purpose: The aim of this study was to report the clinicopathologic features of primary ocular adnexal lymphoma (OAL) with bone marrow (BM) involvement.

Method: Retrospective review of medical records of patients who diagnosed with OAL between 2004 and 2015 was done. The following factors were evaluated : age, gender, histopathologic result, cancer staging based on Ann Arbor staging system and TNM staging system. Performance status and serum lactate dehydrogenase level, white blood cell count were estimated to score IPI (International prognostic index) and MIPI (Mantle cell lymphoma International prognostic index). Overall survival and Progression free survival were also evaluated.

Results: Of a total of 214 patients, 20 patients (9.35%) had bone marrow involvement. Overall survival rate showed statistically significant difference between BM involving group and not involving group. ($p=0.001$, 75% vs. 97.9%) Median OS was 43 months in BM involving group and 53 months in not involving group. 11 (5.78%) of 190 patients with mucosa-associated lymphoid tissue lymphoma (MALToma), 5 (55.55%) of 9 patients with Diffuse large B cell lymphoma, 3 (33.33%) of 9 patients with Mantle cell lymphoma, 1 (16.7%) of 6 patients with another lymphoma showed BM involvement. The conjunctiva (56%) was most commonly involved followed by the orbit (28.5%), adjacent structures beyond orbit (8.4%), eyelid (7%) and 2.5%, 11.5%, 33.3%, 26.7% of individual groups showed BM involvement, respectively. Logistic regression analysis showed that factors including aging, T3 staging, Diffuse large B cell lymphoma, Ki67 were associated with an increased risk of BM involvement. (OR,1.045/10.337/13.270/1.042; $p=0.031/0.008/0.006/0.001$).

Conclusion: OAL with BM involvement occupied small portion of total OAL but it was associated with poor overall survival. Aging, invasion depth of primary tumor, histologic result will be considered as important factors when we decide whether to perform BM biopsy or not in OAL patients.

EP-ONC-462

Positron emission tomography/computed tomography imaging for detection of metastatic uveal melanoma

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Purpose: To evaluate the role of positron emission tomography/computed tomography(PET/CT) in early detection of metastatic uveal melanoma.

Method: 91 patients (25 men, 66 women) aged from 26 to 78 years (mean 52 ± 12) with UM were examined prospectively: 44- before treatment,47- in 3 to 240 months (mediana 26 ± 8 months) after primary treatment. Physical examination, liver enzyme assays, chest x-ray, abdominal ultrasound and "whole-body" PET/CT were done for all patients for screening of metastatic disease.

Results: Hematological liver enzymes assays were increased in one patient with disseminated lesion. The chest x-ray revealed focal fibrotic changes in the lungs (after suffering tuberculosis) in one patient. The abdominal ultrasound revealed multiple lesions (metastases) in the liver in one patient, from

another patient suspected secondary nature of the lesion (later diagnosed a cyst), in 11 patients lesions in the liver regarded as cyst or hemangiomas. PET/CT showed that 7 patients were found to have distant metastases in the liver (2 - solitary, 5 - multiple; sized 5 - 72 mm, SUVmax 4,3 - 10,9). One of 7 patients was found to have PET-positive lesion in the sigmoid colon, which was verified as second cancer - adenocarcinoma of the sigmoid colon (synchronous cancer). In one case, in addition to foci in the liver were found multiple metastases in other organs. 15(16%) patients had foci in the lungs (less than 5mm), but due to the small size their nature has not been determined. Also PET/CT showed accompanying (inflammatory, benign, degenerative and etc.) processes in 82 patients.

Conclusion: PET/CT may detect distant metastatic lesions that conventional imaging studies miss and seems to be more appropriate for early detection of metastatic uveal melanoma.

EP-ONC-463

Incidence of eyelid basal cell carcinoma in Varna region

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Purpose: To study the incidence of eyelid basal cell carcinoma in Varna region for twenty years long period, between 1996 and 2015.

Method: Data for the incident eyelid basal cell carcinoma cases were obtained from the Regional Cancer Dispensary in Varna, Bulgaria. The data for the numbers of the population of Varna district at risk were received from the local office of the National Statistical Institute. The age standardized rates were derived by the direct method using the "world" standard population.

Results: The average age-adjusted incidence for eyelid basal cell carcinoma was 2,75 per 100 000 per year (with 95% CI from 2,57‰ to 2,93‰). The age-adjusted basal cell carcinoma incidence for females was 2,46 на 100 000 per year (95% CI from 2,01‰ to 2,90‰), for males it was - 3,22‰ (95%CI from 2,77‰ to 3,66‰), without statistically significant difference in rates. There is no statistically significant difference in age-adjusted incidence for eyelid basal cell carcinoma between two 10-years long studied periods, from 1996 to 2005 and from 2006 to 2015. Incidence increases with age, especially after 60 years.

Conclusion: The incidence of eyelid basal cell carcinoma in Varna region for the twenty years long period is stable, without trend to increase. There is no statistically significant difference in age standardized incidence for eyelid basal cell carcinoma between genders.

EP-ONC-464

Ocular adnexal lymphoma in a tertiary referral centre in Poland

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Purpose: Ocular adnexal lymphomas (OAL) are rare and represent about 2% of all non-Hodgkin's lymphomas and 80% of all orbital neoplasms. The aim of the study was to assess the clinicopathological characteristics of the treated ocular adnexal lymphomas at the tertiary referral centre in Poland and to audit the treatment results.

Method: The charts of the patients treated due to ocular adnexal lymphoma at the Department of Ophthalmology, Poznań University of Medical Sciences between 2007-2015 were retrospectively reviewed.

Results: We identified 28 patients, 16 women and 12 men in mean age of 59 years. The majority of observed lymphomas were primary (n=26, 92.8%). Among them 62% (n=16) were MALT (mucosa-associated lymphoid tissue) lymphomas, 11% (n=3) were mantle cell lymphomas, 8% (n=2) were diffuse large B cell lymphomas (DLBCL), 4% (n=1) were follicular lymphomas and 4% (n=1) were primary T cell orbital lymphoma.

Most patients were treated with radiotherapy alone with standard dose of 20 Gy (n=11) following the chemotherapy alone (n=8) or combination of both (n=7)

The median follow-up was 30 months (range: 2- 94).

We observed 3 relapses (11.5%) managed with radiation and immunotherapy and one with the surgical excision in a patient who refused the irradiation of the primary lesion. Two patients died by the time the study was closed, both of them from the group with secondary involvement of the orbit.

Conclusion: Conjunctival/orbital lymphomas MALT lymphomas have a good prognosis and external beam radiotherapy is the treatment of choice. However, with follicular or mantle cell lymphomas more aggressive treatment is required.

EP-ONC-465

How to differentiate retinoblastoma from medulloblastoma - a clinical challenge and cell culture experience

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Purpose: To present a case of intraocular medulloblastoma mimicking retinoblastoma, its clinical and pathological features, cell culture experience and MTT assay.

Method: A 2-years old boy was referred to our center with diagnosis "retinoblastoma". A complete examination including RetCam and US was performed. We revealed a large white-gray tumor on the eye fundus, with 5.9 mm height and 11.8 mm diameter, lying above the optic disc. Due to high risk of extrabulbar growth and no perspective for vision enucleation was performed.

Histological diagnosis was "malignant medulloepithelioma/medulloblastoma" with the presence of pseudorosettes and cells, presented as tubular masses. A tumor sample was transported in RPMI medium, followed by cell-rich fluid preparation. We put it into cultural flask, added RPMI and fetal calf serum and transferred to thermostat, followed by 1-month cultivation with 2-4 passages.

Results: An MTT assay was performed according to standard conditions. We tested Irinotecan (Actavis) 0.25, 0.5, 1.0 and 2.0 mg/ml, Iphosphamide (Veropharm) 0.25, 0.5, 1.0 and 5.0 mg/ml, Oxaliplatinum (Medac GmbH) 0.1, 0.2, 0.38, 0.75, 1.5 mg/ml and Ascorbic acid (Alvils) 0.6, 1.25, 2.5 and 5.0 mg/ml. IC50 (3.3 mg/ml) was received only for ascorbic acid. Patient was referred to oncologist for excluding CNS tumor.

Conclusion: Intraocular medulloblastoma is an extremely rare tumor in childhood. It should be taken in consideration when retinoblastoma is suspected. A first experience of medulloblastoma cells cultivation and MTT assay was performed.

EP-ONC-466

The missing piece of the puzzle. Bilateral orbital lymphoma as the presenting sign of systemic lymphoma

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Purpose: Orbital lymphomas are rare tumors comprising only 1% of all non-Hodgkin's lymphomas (NHL). The majority of orbital lymphomas, 84%, are extranodal marginal-zone B-cell lymphomas of MALT. We describe a rare case of bilateral orbital lymphoma as the presenting sign of diffuse large B cell NHL.

Methods: Retrospective case report with full ophthalmological and systemic workup: photos of the patient's eyes, CT scans, PET scans and histological examination. Literature was reviewed.

Result: 79 years old patient with type 2 diabetes, obstructive sleep apnea and congestive heart failure was complaining of cough, fever, night sweats, asthenia and weight loss for the past 3 months. Symptoms were refractory to antibiotics and nonsteroidal anti-inflammatory drugs. Later he developed diplopia and pain with eye movements and came to ophthalmological observation. He presented bilateral proptosis, hypertropia in right eye (OD) with diminished eye movements in all fields of gaze. Visual acuity was 20/32 in both eyes (OU). Pupils were isocoric and slowly reactive to light. Biomicroscopy showed discrete chemosis and hyperemia OU. Fundoscopy showed pale optic discs OU. Orbital CT scans revealed retrobulbar, intraconal bilateral nodular lesions. In OD the lesion measured 2,2cm in largest diameter (LD), and involved the optic nerve, medial and superior rectus and superior oblique. In OS it measured 1,8cm and involved the optic nerve. Further systemic evaluation was performed and systemic diffuse large B cell NHL was diagnosed.

Conclusions: Although lymphoma represents only 7% of all orbital tumors, the incidence is rising. Radiological patterns of orbital lesions have recently been described to give additional clues in differential diagnosis and may help further systemic workup.

This case highlights the importance of interdisciplinary evaluation when dealing with atypical cases, which may present with rare ophthalmologic findings from a severe systemic illness.

EP-ONC-467

Bilateral exudative retinal detachment in an adult women with recidives of breast cancer - case report

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Purpose: To present a case of bilateral exudative retinal detachment in an adult woman with recidives of breast cancer 5 years after surgical treatment.

Method: A 56 years old woman, Caucasian, who was suffering from recidives of breast cancer and was underwent surgery 5 years ago. During first visit: V/A 0.4 in right eye and 0.02 in left eye. Fundus photography, OCT, USG, FFA and MRI were carried out.

Results: MRI and USG did not show secondary metastasis to the choroid and peripheral lymphoid nodules were not involved. There were found hyperpigmentation of the retina, USG and OCT showed exudative bilateral retinal detachment with involving macular area in the left eye. This condition was assessed as result of metastasis of primary tumor.

After consultation with oncologist chemo- and radiotherapy were assigned. 6 monthes follow up period showed positive USG and OCT changes, V/A 0.6 in right eye and 0.1 in left eye. At present time patient is under our control.

Conclusion: In spite of that FFA did not reveal significant metastasis signs, this condition should be assessed as secondary choroidal metastasis of breast cancer and should be carefully differentiated from the effect of toxin produced by primary tumor metastasis.

EP-ONC-468

Spontaneous resolution of macular edema and fluid from retinal hemangioblastoma following delivery of a baby

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Purpose: Pregnancy is known to be associated with transient worsening of central serous chorioretinopathy, uveitis and tumor-related exudation.

We present a case of retinal hemangioblastoma discovered during pregnancy that showed resolution of fluid following delivery of the baby.

Method: A 29-year old healthy non-diabetic woman in her 20th week of pregnancy noted blurred vision in her left eye (OS). Past medical history and family history were unremarkable. Visual acuity was 20/20 in the unaffected right eye (OD) and 20/30 in OS. Anterior segment examination of both eyes was normal.

Fundus examination in OD was normal, while in OS revealed solitary retinal hemangioblastoma measuring 4x4x2 mm with dilated feeder vessels and surrounding exudation. There was also cystoid macular edema and intraretinal exudation in an inferior hemi-stellate pattern.

Fluorescein angiography was not performed due to pregnancy and optical coherence tomography (OCT) in OS demonstrated cystoid edema, intraretinal exudation and subfoveal fluid. Patient declined treatment and was managed with observation.

Genetic testing for von Hippel-Lindau disease was advised.

Results: Four weeks after spontaneous vaginal delivery, visual acuity improved to 20/20 in OS with reduction in exudation. The tumor size remained stable.

OCT in OS demonstrated return of normal foveal contour and trace of intraretinal exudation inferiorly.

Conclusion: Pregnancy can be associated with worsening of central serous chorioretinopathy, diabetic retinopathy and uveitis. In addition, pregnancy has

been reported to cause transient increase in tumor-related leakage documented with choroidal hemangioma and choroidal melanoma.

These features could be secondary to fluid retention and hormonal imbalance during pregnancy with resolution following delivery.

In our case, we suspect that similar changes caused increased exudation from retinal hemangioblastoma during pregnancy and spontaneously resolution following childbirth.

EP-ONC-469

Cutaneous abrasion of eyelids following ocular taping in a patient with amyloidosis

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Purpose: Amyloidosis is a localized or systemic disease resulting from abnormal deposits of misfolded proteins in tissues¹. Diagnosis is confirmed through biopsy and histologic examination of affected organs. We present the case of a patient who was diagnosed with amyloidosis after the accidental tearing of the eyelid skin during removal of protective tape used during anesthesia.

Method: A 53-year-old man with a history of lambda light chain multiple myeloma presented to the operating room for a left femur intramedullary nail. After induction of anesthesia, clear tape (3M Transpore™) was gently placed over the patient's eyelids for ocular protection. When the tape was removed at the end of the procedure, the skin of the patient's upper eyelids detached with the tape causing bilateral cutaneous abrasions. An ophthalmologic evaluation revealed that the patient had a history of abnormal eyelid pigmentation and a decision was made to send the tissue for dermatopathologic assessment. Bacitracin ointment was applied four times daily to care for the patient's abrasions.

Results: Pathologic evaluation revealed the skin to be hair-bearing and friable. A positive Congo red stain of the tissue was consistent with the diagnosis of amyloidosis.

Improvement in the patient's abrasions was noted after a week of therapy with bacitracin ointment.

Conclusion: While cutaneous manifestations of systemic amyloidosis occur in 30-40% of patients², amyloidosis of the eyelids is rare. The abrasions of this patient's eyelids likely resulted from a combination of capillary fragility caused by amyloid angiopathy³ and disruption of the skin's basement membrane at the epidermal-dermal junction².

Therapy for cutaneous amyloidosis includes lubricants and steroids³. Recommendations to avoid ocular abrasion in patients with amyloidosis during procedures include eye lubrication and shielding with gauze³ as well as avoiding Trendelenburg positioning, Valsalva maneuvers, and eye manipulation⁴.

EP-ONC-470

Spontaneous subretinal haemorrhage associated with Astrocytoma*Arora A., Fabian I., Cohen V.**Moorfields Eye Hospital, Ocular Oncology, London, United Kingdom*

An otherwise healthy 49-year-old white man, originally diagnosed with a solitary left optic disc astrocytic hamartoma 15 years beforehand, was referred because of visual blurriness in the left eye. Visual acuity was 20/20 and funduscopy confirmed the presence of a pale mulberry-like tumour adjacent to the optic disc and surrounded by an arc of subretinal haemorrhage. Fluorescein angiography failed to demonstrate a choroidal membrane or aneurysm. Observation after 2 months showed most of the bleed was gone. Subretinal haemorrhage is a rare astrocytoma-related complication. However, a conservative approach maybe found beneficial

EP-ONC-471

Subconjunctival hemorrhage as a sign of retro-orbital tumor. A case report*Blazevska J., Rauscher A., Schmidbauer J.**Paracelsus Medical University, Department of Ophthalmology, Nuernberg, Germany*

Hyposphagma is one of the most common diagnosis in the outpatient ophthalmology clinic, most frequently considered to be idiopathic, a result of anti-coagulation therapy or high blood pressure. To the best of our knowledge this is the first case reported in literature where subconjunctival hemorrhage is a sign of a big retro-orbital Tumor.

A 71 years old Caucasian female patient was referred from her general practitioner to the ophthalmology clinic with headache in the temporal region, with suspected Horton's disease. After the eye examination and blood test, while in the waiting room, the patient developed acute subconjunctival hemorrhage. After the following CT-angiography a retro-orbital Tumor 18mm x 14mm x 17mm with damming of the orbital veins was diagnosed. The visual acuity on the affected eye was 20/20. After the two-day observation of the new developed multiple Hemorrhages in the ocular region and MRI, the Patient was referred to the neurosurgery department for further treatment.

The diagnostics of hyposphagma should be taken in consideration where unclear local cephalgia of otherwise healthy patients is developed.

EP-ONC-472

Patients undergoing iridocyclosclerectomy - a follow-up study*Alexa A.-I.¹, Cojocaru E.¹, Cantemir A.¹, Alexa-Stratulat T.², Ceornea A.³, Chiselita D.^{1,3}**¹University of Medicine and Pharmacy 'Grigore T. Popa', Iasi, Romania, ²Regional Institute of Oncology, Iasi, Romania, ³Sf. Spiridon' Emergency Clinical Hospital, Iasi, Romania*

Purpose: Evaluation of a series of patients clinically suspected of iris or ciliary body melanoma for which iridocyclosclerectomy was performed.

Method: We conducted a retrospective study including 8 cases of patients with a mean age of 54 years old, admitted to "Sf.Spiridon" Hospital in Iasi, Romania, during February 2013 - September 2016 with clinically suspicion of iris or the ciliary body melanoma without scleral invasion. All cases were

followed up an average of 3 month by serial photographs of anterior pole, gonioscopy and ophthalmic ultrasound biomicroscopy. Subsequently, depending on tumor size and location, iridocyclosclerectomy was performed.

Results: The diagnosis was initially established during a clinical routine eye examination in which 7 of the 8 patients showed no symptoms. Only one patient accused ocular pain with an intraocular pressure of 52 mmHg. Visual acuity of the affected eye was 1 on Snellen scale with appropriate optical correction in all patients. The tumors had a maximum of 5 mm and a minimum of 2 mm diameter, and were located predominantly in the eyeball lower half, 1 case being associated with uveal ectropion.

Histopathological examination confirmed the diagnosis of melanoma only in 4 cases, 3 cases being diagnosed as melanocytic nevi and in 1 case the morphological and immunohistochemical aspects corresponded to a ciliary body adenoma of non-pigmented epithelium.

Postoperative visual acuity ranged between 0.2 and 0.6 with appropriate optical correction. The most important complication was secondary ocular hypertension (5 cases) which was reduced by topical medication. After a mean post-operative follow-up of 1 year, no patient presented recurrences or metastases

Conclusion: The histopathological examination is sometimes not consistent with the preoperative clinical diagnosis. Iridocyclosclerectomy is a safe surgical technique in terms of oncological parameters and preserves functionality of the eyeball.

EP-ONC-473

A pilot trial of an augmented reality wearable device to restore the visual field in monocular vision*Artopoulos A.**King's College London Dental Institute, Academic Centre of Reconstructive Science, London, United Kingdom*

Purpose: to assess whether the visual field of individuals with one-sided vision could be improved by projecting information from the defective vision side to the normal vision side by means of a wearable computer device.

Method: the prototype device comprised of a wearable computer with augmented reality display (Google Glass Explorer Edition), which was connected to an external camera (Pi camera) placed on the opposite side of the see-through display using a custom 3D printed mount. The camera was controlled by custom written software running on a micro-computer (Raspberry Pi 2) and projected a stream of images to the Google Glass display. Five participants who had previously undergone exenteration or enucleation of the left eye tested the device and completed visual field testing (Bjerrum screen test). Open-ended interviews were conducted to collect qualitative information.

Results: visual field test results showed a significant percentage of the normal visual field could be restored on the defective side through the display. All study participants felt very positive about the concept and would be willing to participate in further related research. Main problems highlighted were the inconvenient form factor and image lag, both of which could be improved with more resources.

Conclusion: findings of this proof of concept study indicated that augmented reality technology could offer a possible option for restoring the visual field in one-sided vision to enhance awareness of the surroundings and safety for individuals with monocular vision.

EP-ONC-474

Chronic bilateral ocular hypotony due to idiopathic sclerocorneal fistulas

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Purpose: To present a previously unreported case of chronic bilateral ocular hypotony due to idiopathic sclerocorneal fistulas.

Methods: A 31 year old healthy man was referred to the clinic with a history of two-year of bilateral intraocular hypotony, of unknown etiology. He had no previous history of any ocular inflammation, ocular trauma or ocular surgery. His systemic history was also irrelevant.

The following examination were performed: full slit lamp examination with detailed funduscopy, aplanation tonometry, pachymetry, autokeratorefractometry, ocular biometry, ASOCT, OCT, FA, USG, UBM, general laboratory tests.

Results: In the initial examination the following abnormalities were noticed: decreased BCVA in both eyes, ocular hypotony (1mmHg) with no change after pachymetry inclusion, nasal conjunctiva swelling, no signs of ocular inflammation, subcapsular cataract and choroidal folds in macular region. UBM exam revealed the presence of bilateral sclera-corneal fistulas in the place of conjunctival swelling, with subconjunctival fluid presence.

Patient subsequently underwent cryotherapy of fistulas with good IOP results. One month post op the IOP was stable in both eyes (10mmHg). The macular condition improvement was observed in OCT.

Conclusion: Bilateral ocular hypotony may be a result of sclera-corneal fistulas. Although they are rare conditions they should be included in differential diagnosis of ocular hypotony. UBM test is essential in the correct diagnosis.

EP-ONC-475

Metastatic tumors of the choroid - patient survival and clinical characteristics

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Purpose: Choroidal metastasis is uncommon and occurs in a relative short number of patients with cancer. The aim of this study was to assess the clinical features and treatment options in two tertiary referral centers.

Method: Retrospective case series. The authors analyzed the charts of all patients who presented with choroidal metastases at the two institutions between January 2016 and January 2017.

Results: Five eyes from 5 patients (3 women, mean age \pm standard deviation (SD): 53.20 ± 12.94) with confirmed choroidal metastasis were included. The primary neoplasm was breast (n=3), colon (n=1) and pancreas (n=1).

All patients presented to the ophthalmologist with visual symptoms (blurred vision or visual field defect).

Only one patient had known metastatic disease before the choroidal involvement. On the other hand, in one patient the choroidal metastatic tumor was the first manifestation of a colonic neoplasm.

Three patients were alive with metastatic disease after a mean follow-up of 6 months. The remaining 2 patients died of systemic progression after a mean interval of 8.5 months (SD \pm 4.95).

The preferred ocular treatment was 3D conformal radiotherapy with 30 Gy (3 Gy per fraction).

Conclusion: Upon diagnosis of choroidal metastases, more than 50% of patients are found to have other sites of metastatic spread. However, as stated in our small sample visual symptoms in oncologic patients can be the first sign of disseminated disease and, rarely, the first sign of cancer. Metastization from pancreatic cancer to the ocular region is extremely rare. Although the most common primary tumor locations are the breast and lung it is important to consider a broader range of primary sites during investigation.

Albeit systemic outcome is poor, choroidal metastases respond well to radiotherapy.

EP-ONC-476

Uveal melanoma treatment at linear accelerator in Slovakia

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Purpose: Intraocular uveal melanoma is the most common and most aggressive type of intraocular tumor in adults. Radiotherapy (proton beam, charged particle, brachytherapy, Leksell-gama knife, stereotactic radiotherapy at linear accelerator) has become the preferred treatment for most patients with uveal melanoma over the past decades.

Methods: Retrospective study of patients with uveal melanoma treated at linear accelerator LINAC in Slovakia.

Results: In group of 170 patients with posterior uveal melanoma median tumor volume at baseline was 0.5 cm³ (with range from 0.2 to 1.6 cm³). The therapeutic dose was 35.0 Gy by 99 % of dose volume histogram. In 20 patients (11.7 %) secondary enucleation was necessary due to complications (secondary glaucoma). Enucleation free interval ranged from 1 to 6 years. The survival after stereotactic irradiation was 96 % in 1 year, 93 % in 2 years, 84 % in 5 years, 80 % in 7 years after stereotactic irradiation.

Conclusions: Stereotactic radiation therapy provides good local control. Survival rates in patients with uveal melanoma in 5 year interval and secondary enucleation due to complications after linear accelerator irradiation is comparable to other irradiation techniques.

EP-ONC-477

Uveal melanoma infiltrating the orbit

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Purpose: Primary or secondary orbital melanomas represent less than 1% of primary orbital neoplasms. Melanomas arising in the orbit can present diagnostic and management challenges to the physician. The pathogenesis of primary orbital melanoma is a matter of some debate. Uveal melanomas in T4 stage are rare.

Methods: Retrospective study of patients with orbital melanoma.

Results: In period 2006 - 2015 a group of 4 patients underwent exenteration of the orbit due to uveal melanoma infiltration of the orbit (stage T4). In 3 patients exenteration was the primary therapeutical procedure, in one patient after pars plana vitrectomy with incomplete endoresection of the tumor and irradiation. In all of the patients histopathologically was confirmed mixed cell type malignant melanoma. Patients after exenteration got an individual prognosis.

Conclusions: Progression of malignant melanoma after incomplete endoresection despite previous radiosurgical treatment can be very rapid in the course of the disease documented by ultrasound, computed tomography and magnetic resonance. During endoresection is opened the package fibrous mesh gateway for the infiltration process in the cavity of the orbit and epibulbar space. In the case of residual melanoma after endoresection even though the tumor was irradiated before the procedure the melanoma might progress very fast into the surrounding tissues.

EP-ONC-478

Secondary glaucoma complication after stereotactic irradiation for ciliary body melanoma

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Purpose: The most common treatment for ciliary body melanoma is radiotherapy (plaque brachytherapy, proton beam therapy). Either external beam therapy or brachytherapy can be used for medium-size tumor (less than 15 mm in diameter). Stereotactic irradiation on linear accelerator is relatively a new method.

Methods: Retrospective study of patients with ciliary body melanoma treated with linear accelerator (LINAC) stereotactic irradiation. Irradiation dose was 35 Gy (TDmax 42-52Gy). Analysis of late-onset secondary glaucoma after stereotactic radiosurgery for ciliary body melanoma.

Results: In the group of 18 patients (10 male, 8 female) the mean age was 47 years (40 - 80 years). Glaucoma developed in first year in 4 patients, in second year in 4 patients. Secondary glaucoma more than 4 years after stereotactic irradiation was under control with combined therapy in 8 patients. In 4 patients (22.2%) enucleation was necessary due to complication - secondary glaucoma in the second and third year after irradiation.

Conclusions: Secondary glaucoma is rare complication after stereotactic radiosurgery and depends from the volume of the tumor. Stereotactic planning scheme system must avoid involvement of irradiation critical structures (optic disc).

ELECTRONIC POSTER PRESENTATIONS PAEDIATRIC OPHTHALMOLOGY AND STRABISMUS

EP-PED-480

Comparison of the efficiency of various muscle transposition procedures using a three-dimensional model

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Purpose: To investigate the performance of a newly developed three-dimensional (3D) biomechanical model and to evaluate the efficacy of various transposition procedures for correction of complete sixth nerve palsy.

Methods: A 3D biomechanical eye model was created using Hyperworks software based on geometric data and the biochemical properties of the eyeball and extraocular muscles. A complete sixth nerve palsy model was achieved via modification of lateral rectus muscle strength. Four different muscle transposition procedures (the Hummelsheim, Jensen, Foster, and simple and augmented muscle union procedures) were set up, and the objective surgical effect of each procedure was calculated using 3D model simulation.

Results: In the 3D simulation, sixth nerve palsy was modeled by rotating the eye 34.16 degrees in the medial direction, consistent with 70 prism diopter (PD) esotropia. In surgical model simulation, the Hummelsheim procedure resulted in a 28 PD reduction of total deviation, the Jensen procedure achieved a 34 PD reduction, the Foster procedure led to a 57 PD reduction, the simple muscle union procedure yielded a 34 PD reduction, and the augmented muscle union procedure resulted in a 57 PD reduction in esotropia in sixth nerve palsy.

Conclusion: The 3D simulation provided a consistent model of sixth nerve palsy and objective data excluding the potential for variation of surgical skill. It could also help predict surgical outcomes.

EP-PED-481

Pediatric herpetic eye infection - diagnosis and treatment

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Purpose: Herpes simplex type 1 virus (HSV-1) is present in 50-90% of the world population and is the leading cause of blindness world-wide. Compared to the adult population, the paediatric one, has a higher incidence of stromal disease, with higher recurrence rate and greater refractive errors risk, which can lead to amblyopia. An early diagnosis and effective therapy is therefore mandatory;

Method: We present a retrospective study of the clinical results of 13 children, being the age of on-set, sex, initial symptom, time for diagnosis, treatment and final best corrected visual acuity (BCVA) reported. Diagnosis was made with clinical criteria. All statistical analysis was made through Microsoft Excel.

Results: Average age of disease on-set was 5,2 years and the average time of follow-up 8,5 months. Average time for diagnosis was 11 days. The most common clinical manifestation was unilateral palpebral disease (8/13), 4 of which later showed associated epithelial keratitis. The other patients, 2 presented with isolated epithelial keratitis and 3 stromal keratitis. Disease recurrence was greater in the topical treatment monotherapy (3/5) than in the combined therapy group (1/8). 12 of the 13 patients obtained a BCVA higher than 20/40, being the average 0.82;

Conclusion: Paediatric herpetic ocular infection is a major diagnosis and therapeutic challenge. Amblyopia risk entails a severe visual prognosis being of the outermost importance a correct therapy and adequate follow-up of this patients.

EP-PED-482

Simplified application of medial transposition of 'Y split lateral rectus muscle operation' for complete CN 3rd. palsy

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Purpose: Recent popular surgical approach for treatment in complete CN3rd. paralysis is Gokyigit's medial transposition of Y split lateral rectus muscle for these cases. That technique itself and modifications has transient complication. Both for preventing that complication and simplifying the technique, we performed the operation without passing the arms of muscle under the oblique muscles. In this study we evaluate the new application results and compare with original Gokyigit's operation results.

Method: In this retrospective study, there were 13 cases operated with original Gokyigit's transposition technique named as Group 1, and 8 cases operated with simplified Gokyigit technique named as Group 2. In simplified technique, after the dis-insertion split lateral rectus arms from sclera, the upper half was passed under the superior rectus muscle and the inferior half was passed under the inferior rectus muscle and moved to the medial rectus muscle insertion area.

Patients' pre and postoperative deviations in primary position were noted, < 14pd. deviation accepted as successful. SPSS for windows program used for statistical evaluations. P<0.05 accepted as significant.

Results: Both groups results found similar after 12 month follow-up.

Conclusion: There is not strictly necessity to pass the arms of lateral rectus under the oblique muscles during the Medial transposition of Y split lateral rectus.

EP-PED-483

Evaluation of a new method of assessing suppression in amblyopia, and the effect of light source variability

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Purpose: A concern with the treatment of amblyopia in those with strabismus is the risk of intractable diplopia, due to elimination of suppression. The usual method of assessing suppression is to reduce the amount of light being transmitted to the non-amblyopic eyes retina. The commonly used Sbisabar, is known to produce variable responses, therefore we aim to assess a new method of measuring the density of suppression, to determine if a more con-

sistent response is possible, in comparison to the Sbisabar and Bagolini bars. We also evaluate the stability of luminance of various light sources, to determine if changes in filter density exceed luminance variability.

Methods: The new device comprises of two linear polarisers that vary from parallel to perpendicular, thus varying the amount of light transmitted according to Malus' law, using 5° changes in angle. The experiment measured the amount of light passing through the different devices as the filter opacity increased using a spectroradiometer. Two light sources were compared: a standard tungsten photography light source and a specialist high end stable light source.

Results: Spearman's correlation between filter density and luminance for each method is: Polarisers: $r=-0.98$, Sbisabar: $r=-0.99$, Bagolini: $r=-1.0$, all $p<0.01$. However, the difference between filters is non-linear on traditional bars. The variation in light source luminance over eight minutes was 9% for the tungsten and 2% for the stable light source.

Conclusions: All three methods tested show a significant, strong negative correlation; as filter strength increases, light transmission reduces. A change of filter number may not necessarily represent a change in density of suppression however, as variations in the light source stability may affect the light transmitted. Malus' law demonstrates that crossed polarisers provide near perfect linear steps between 10° and 80° crossing.

EP-PED-484

Myopic strabismus that mimics concomitant esotropia

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Purpose: Some mild cases of myopic strabismus have no or very little mechanical restriction in abduction and are, therefore, hard to distinguish from concomitant esotropia. The purpose of this study is to evaluate the surgical outcome of uniting the superior and lateral rectus muscle bellies in such cases.

Methods: Subjects are 12 eyes in 6 consecutive cases of myopic strabismus that had only small degree of or no mechanical restriction in abduction and underwent union of the superior rectus (SR) and lateral rectus (LR) muscle bellies in both eyes following confirmation of globe dislocation by coronal MRI. All patients were female and mean age \pm SD (min. to max.) at the time of surgery was 59.7 \pm 9.4 (42 to 67) years. Every eye in every patient could abduct past the midline. Mean ocular deviation angle \pm SD (min. to max.) at near measured by alternate prism cover test, or Krimsky's method when steady fixation on a visual target was impossible because of myopic macular degeneration, was 33.2 \pm 27.2 (2.0 to 79.5) prism diopters (PD). Mean visual acuity \pm SD (min. to max.) was 0.24 \pm 0.31 (0.06 to 0.95) logMAR. The mean axial length \pm SD (min. to max.) was 30.2 \pm 3.49 (25.4 to 35.1) mm.

Results: Mean deviation angle decreased from preoperative 33.2 \pm 27.2 PD to postoperative -1.5 \pm 11.7 PD. Preoperatively 5 out of 6 patients had no stereoacuity and one complained of diplopia at distance. Postoperatively 4 out of 6 patients regained stereoacuity better than 400 arcsec with Titmus Fly test. The remaining 2 patients that did not recover stereoacuity had poor visual acuity of 0.7 logMAR or worse in either eye.

Conclusions: SR-LR muscle belly union, which has been proved to be effective on convergent strabismus fixus, is also effective on mild cases of myopic strabismus in the improvement of both motor and sensory function.

EP-PED-485

Alström syndrome: a systemic ciliopathy with cone-rod dystrophy

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Purpose: Alström syndrome is a very rare systemic ciliopathy characterized by multiorgan dysfunction that has cone-rod dystrophy as its most consistent feature. Extraocular manifestations include childhood obesity, progressive sensorineural hearing impairment, metabolic syndrome, dilated cardiomyopathy and slowly progressive renal dysfunction. We present a case of Alström syndrome with cone-rod dysfunction.

Methods: A 7-year-old girl previously diagnosed with Alström syndrome with regular follow-up in several Pediatrics sub-specialties was referred to Ophthalmology with complaints of progressive loss of visual acuity and light sensitivity. Ophthalmological examination, image study and electrophysiology testing were performed.

Results: The patient had a past medical history of morbid obesity, insulin resistance and pseudoacanthosis nigricans but no diabetes mellitus, hearing impairment, cardiomyopathy or kidney failure. She had a best corrected visual acuity of 4/10 in the right eye and 3/10 in the left eye, horizontal and torsional nystagmus and alternating convergent strabismus. Anterior segment examination was normal. Fundoscopy revealed slight optic nerve hypoplasia and generalized vascular tortuosity in both eyes. Electrophysiology testing revealed cone-rod dysfunction, worse in the left eye, and prolonged latency times and low prechiasmatic amplitudes in visual evoked potentials.

Conclusion: Alström syndrome should be considered in children with obesity and cone-rod dystrophy. As there are no pathognomonic fundus findings, electrophysiology testing is valuable to the retinal dystrophy diagnosis. Although this patient had reasonable visual acuity, retinal dystrophy tends to progress in a severe manner, usually leading to no light perception in early twenties. Proper follow-up with a multidisciplinary team is warranted given the systemic involvement of the disease.

EP-PED-486

Change of refractive errors in children with astigmatism and without anisometropia

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Purpose: To investigate the change of the spherical equivalent (SE) refractive errors and the amount of astigmatism in three- and four-year-old children for long term follow up.

Methods: Cycloplegic refraction measurements were obtained for 107 children, with follow-up measurements in 70 patients after at least 3 years.

Results: Astigmatism was 48% and mean astigmatism amount was -1.04 D at baseline, which increased to -1.25D after mean follow-up of 4.60 years.. Mean change of SE in the astigmatic group was bigger than the non-astigmatic group. (-1.69 D vs. -1.35 D, $p=0.703$).

Mean change of astigmatism was significantly bigger in the astigmatic group than in the non-astigmatic group (-0.24D vs. -0.18 D, $p=0.041$).

In addition to, mean change of astigmatism in the myopic astigmatic group had more increased than in the hyperopic astigmatic group (-0.33D vs. -0.18 D, $p=0.044$).

Conclusions: Preschool children in this astigmatic group showed more hyperopic than in the non-astigmatic group. The amount of astigmatism increased more in the astigmatic group than non-astigmatic group, and especially increased more in the myopic astigmatic group than in the hyperopic astigmatic group.

EP-PED-488

Congenital cataract with 27 gauge vitrectomy system

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Purpose: To evaluate the safety and efficacy of a 27-gauge vitrectomy system for the management of congenital cataract in children younger than one year.

Method: Children in a University hospital had cataract extraction using a 27-gauge vitrectomy system. Each eye had anterior vitrectorhexis, lens aspiration, posterior vitrectorhexis, and anterior vitrectomy. The ports were created with a 25-gauge trocar. The eyes were left aphakic.

Results: Bilateral eyes of child had a successful surgical outcome with the 27-gauge vitrectomy system. The limbal side ports in 2 eyes created with the 25-gauge trocar required suturing to seal the ports. There were no significant intraoperative or postoperative complications.

Conclusion: The 27-gauge TDC cutter vitrectomy system appears safe and effective for the management of infantile cataract. Advantages include more precise manipulations with smaller instruments in infant eyes, a more stable anterior chamber, and rapid healing of corneal ports.

EP-PED-489

Types of adult strabismus among the patients in Republican clinical hospital of Republic of Moldova

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Purpose: Of this study was to describe the types of adult strabismus presenting to the Republican Clinical Hospital - a tertiary care center of Republic of Moldova.

Method: We retrospectively reviewed the medical records of 183 cases of adult strabismus consulted in our eye clinic over a period of 5,5 years (January 2005- June 2016).

Results: There were 84 males and 99 females, the age varied between 18-58 years. 59 patients (32,24%) were with esotropia, 92 patients (50,27%) with exotropia, 9 patients with vertical deviations (4,9%), 14 (7,6%) with paralytic strabismus and 9 (4,9%) with restrictive strabismus. 119 cases (65,03,%) from all this 183 patients were childhood strabismus, that was either untreated (44,94%) or insufficiently treated (16,85%), or consecutive (38,20%). The remaining patients have adult-onset strabismus.

The main complain of these patients were cosmetic and psychological (78,32%) followed by functional (21,68%).

Of the 144 (78,68%) patients who were advised surgical correction 121 individuals consented to undergo surgery. 23 patients refused any surgical intervention despite counseling, while surgery was not advised in 1 cases due to the presence of conditions such as Duane's retraction syndrome with orthophoria,

restrictive strabismus due to thyroid ophthalmopathy in acute phase (4), strabismus due to posttraumatic changes (chronic uveitis, microphthalmos (6), and paralytic strabismus of acute onset (5).

Conclusion: Whether strabismus in adults occurs secondarily or because it was not previously treated in childhood, it causes specific concerns, such as cosmetic, functional, psychological and professional.

EP-PED-490

Postoperative outcomes in adult strabismus patients with visual impairment

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Purpose: To evaluate the results of surgical treatment in adult strabismic patients with visual deficits and the stability of postoperative alignments.

Methods: We retrospectively analyzed the chart of 84 adult patients who underwent surgery for strabismus correction in our institution between 2000 and 2015. A complete ophthalmological and orthoptic examination was performed for evaluation of alignment and binocular visual function. The patients were divided in two groups: I - patients with best corrective visual acuity (BCVA) < 0.3 in one or both eyes. The results in these patients were compared to those in patients with BCVA \geq 0.6 in the worse eye, matched by the age at the time of surgery, type of strabismus, degree of deviation, and length of follow-up time at least 3 years.

Results: Forty-two patients aged $29,56 \pm 11,4$ (18-61) years were included in the I group, and 42 subjects aged $26,69 \pm 9,7$ (18-58 years) were included in the second - control group. No significant difference was found in the deviation angle between the two groups, the mean degree of deviation in I group was 33 PD (range: 15 to 74 PD) and 29 PD (range 15 to 68 PD) in the control group. The surgery was considered a success in 27 patients (64.3%) in the I group and 33 patients (78,6%) in the control group at the last visit ($X^2 = 6.89$, $p = 0.006$). An average shift toward exotropia of 8.6 PD in the visual deficit group and 4.4 PD in the control group was observed at the final visit comparing with first postoperative day ($t = 1.06$, $p = 0.04$).

Conclusion: We recommend a careful examination and surgery planning when operating patients with visual impairment to avoid a possible future exotropic deviation.

EP-PED-491

Variations of intraocular pressure in children subjected to general anesthesia with sevoflurane

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Purpose: To determine if sevoflurane lowers intraocular pressure in children undergoing general inhaled anesthesia.

Method: Material and methods. A prospective, longitudinal, observational study was performed on 75 patients undergoing strabismus correction using general anesthesia inhaled with sevoflurane. The parents gave consent for the participation of patients. The IOP measurement was performed on both eyes with the ICare® rebound tonometer, according to the manufacturer's instructions. These measurements were performed prior to surgery, at 3 and 5 min-

utes after induction with sevoflurane. Statistical analysis was performed using SPSS using descriptive and inferential statistical tests as appropriate. Repeated measures ANOVA were used to evaluate changes in IOP, with $p < 0.05$ being considered significant.

Results: Seventy-six patients were included, 35.5% were female and 64.5% were male. The mean age of the patients was 6.0 ± 3.2 (minimum age 1 year and maximum age 13 years). The mean minimum alveolar concentration (CAM) of sevoflurane in patients was 4.8 ± 2.1 (range 2-8). Baseline IOP in the right eye was 15.87 ± 2.8 , while in the left eye it was 15.89 ± 3.0 ($n=894$). In the right eye, IOP changed from 15.87 ± 0.32 mmHg before surgery to 12.56 ± 0.30 mmHg at 3 minutes and at 14.34 ± 0.4 mmHg at 5 minutes post-administration of sevoflurane ($p < 0.001$).

In the left eye, the IOP changed from 15.89 ± 0.34 mmHg before surgery to 12.65 ± 0.33 mmHg at 3 minutes and a 14.39 ± 0.41 mmHg at 5 minutes post-administration of sevoflurane, $p < 0.001$.

Conclusion: Sevoflurane induces a significant reduction of intraocular pressure in pediatric patients undergoing general inhalation anesthesia.

EP-PED-492

New risk factors for strabismic and non strabismic amblyopia in the pediatric population of Hospital de Braga

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Purpose: To assess the role of new risk factors for amblyopia, such as family history and neonatal background, for the prediction of either strabismic amblyopia (SA) or non-strabismic amblyopia (NSA).

Methods: The study followed a retrospective case-control model. The study population included all children born in Hospital de Braga during 1997-2012 (3 to 18 years-old) with ophthalmologic consultation in 2014. Data collection was performed from the clinical database and through telephonic questionnaire surveys.

Results: A total of 298 (50%) controls and 298 cases (50%) [120 (40.3%) SA and 178 (59.7%) NSA] were analyzed. A significant lower weight at birth was detected in SA compared to control. Fifth minute APGAR was significantly lower in SA than in control or NSA. Either amblyopia or strabismus in a relative was significantly more associated with SA than with NSA. Multinomial regression explained the variance in amblyopia development between 44.4%-50.8%. Amblyopia in a relative significantly predicted SA and increased the chance of NSA. Low fifth minute APGAR had a relevant odds ratio for either SA or NSA. Strabismus in a relative also had a relevant odds ratio for SA.

Conclusions: This division in amblyopia subtypes gives a new perspective on the risk factors for amblyopia, with family history and some obstetric/neonatal outcomes appearing to be more relevant in SA. Educating health care providers to recognize these risk factors can result in an early ophthalmologist referral.

EP-PED-494

Refractive and anatomical outcomes after laser versus bevacizumab treatment for type 1 retinopathy of prematurity in zone 2Kang M.J.¹, Kang H.G.², Park H.W.¹, Han J.², Han S.-H.¹¹Department of Ophthalmology, Institute of Vision research, Severance Hospital, Yonsei University College of Medicine, Seoul, Korea, Republic of, ²Department of Ophthalmology, Institute of Vision research, Gangnam Severance Hospital, Yonsei University College of Medicine, Seoul, Korea, Republic of**Purpose:** To determine refractive errors and anatomical outcomes associated with laser photocoagulation (PRP) versus intravitreal bevacizumab (IVB) when treating type 1 retinopathy of prematurity (ROP) in zone 2.**Method:** Consecutive infants with type 1 ROP who received either IVB or PRP for type 1 ROP between 2006 and 2013 were reviewed from 2 tertiary referral hospitals. Recurrence rate, complication rate, refractive error and anatomical outcomes were compared between the two groups.**Results:** A total of 156 eyes (79 patients) with type 1 ROP were evaluated and infants treated for zone 2 abnormalities were specified for this study (n=115 eyes). 56 eyes received PRP only, 49 eyes received IVB only, and 10 eyes received combined therapy of PRP with IVB. Mean gestational age, birth weight, postmenstrual age at initial treatment, and follow-up period for infants receiving PRP only and IVB only were compared (27.6 weeks, 920.4g, 73.9 weeks, and 269.7 weeks for PRP only; 27.1 weeks, 898.7g, 77.2 weeks, and 152.4 weeks for IVB only, respectively). ROP recurrence after initial treatment occurred in 11 out of 115 eyes (9.57%), with the majority after initial treatment of IVB (8 out of 11 eyes, 72.7%, p<0.001). Mean spherical equivalence and postgestational age at the last refraction for zone II ROP eyes treated with PRP were +0.25 diopters (D) and 67.4 months, respectively and +0.43D and 38.10 months for IVB-treated eyes.**Conclusion:** Both IVB and PRP are effective treatment options for type 1 zone 2 ROP with similar refractive and anatomical outcomes. For concerns of late tractional detachment and recurrence for infants receiving IVB only, laser treatment can be considered more favorably in type 1 ROP of zone 2.

EP-PED-495

Results of frontalis suspension surgery using ptose-up strips in congenital ptosis

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Purpose: To study the effect of Ptose-up (a strip of biomaterial made of expanded poly- tetra-fluoro-ethylene) suspension regarding the functional and aesthetic outcomes in patients with congenital ptosis. To characterize visual problems in children with ptosis before frontalis sling procedure.**Method:** A retrospective case series study enrolled 18 patients with congenital ptosis. All of these patients underwent Ptose-up frontalis suspension for severe blepharoptosis with poor levator function and completed a minimum of 6 months of follow-up. Exclusion criteria were good levator function, absent Bell's phenomenon, corneal sensation lost and abnormal ocular motility. The outcome was analyzed by marginal reflex distance test 1 (classified as very good >3mm, good (1-3mm), poor < 1mm) and symmetry of eyelids height. Complications were reported. The presence of amblyopia and abnormal head posture was analyzed.**Results:** A total of 7 girls and 11 boys were studied with mean ages of 7,4 (range 3-16). Good and very good cosmetic correction was achieved in 16

children (88,9%). Observed complications included: suture granuloma (1 eye), sling exposure at forehead incision (1 eyes) and recurrence of ptosis (2 eyes). Prior to surgery 10/18 children had anisometropic amblyopia and 2/18 abnormal head position.

Conclusion: Ptose-up is a safe material for frontalis suspension in patients with severe ptosis. Correction of congenital ptosis may contribute to start visual rehabilitation because of amblyopia.

EP-PED-496

Anesthetic depth in general anesthesia does not affect the occurrence of emergence agitation in children undergoing strabismus surgery: prospective observational studyLee Y.J.¹, Hwang J.-M.², Kim J.-H.¹, Do S.-H.¹, Hwang J.-W.¹, Na H.-S.¹, Park I.S.¹, Sim J.B.¹¹Seoul National University Bundang Hospital, Dept of Anaesthesiology & Pain Medicine, Seongnam, Korea, Republic of, ²Seoul National University Bundang Hospital, Department of Ophthalmology, Seongnam, Korea, Republic of**Purpose:** Emergence agitation (EA) is one of the postoperative problems in pediatric patients undergoing general anesthesia. We evaluated whether the depth of general anesthesia might affect the occurrence of EA.**Method:** 68 pediatric patients who were scheduled to undergo strabismus surgery were enrolled for this study. Volatile induction and maintenance anesthesia was performed under the bispectral index (BIS) monitoring. Enrolled patients were divided into two groups according to the intraoperative BIS range: the low BIS or the normal BIS group. When patients were transferred to PACU after finishing operation, the Pediatric Anesthesia Emergence Delirium (PAED) scale was evaluated three times at an interval of 15 minutes. Fentanyl was administered to the patients whose PAED score was 10 or more. Using repeated measures ANOVA (RM ANOVA), we analyzed PAED scores between the groups. If RM ANOVA showed significant difference, Mann-Whitney U-test was performed at each time point. Difference in the incidence of rescue medication was compared by using Chi-square test. The relative risk (RR) and 95% confidence interval (95% CI) were calculated. P < 0.05 was considered significant.**Results:** Finally 62 patients were recruited. According to intraoperative BIS range, 28 and 34 patients were allocated to the low BIS and the normal BIS group, respectively. EA occurred comparably in the normal BIS and the low BIS groups (67.6% vs 67.9%; RR 0.99; 95% CI 0.34-2.89; P = 0.99). The PAED scores were not significantly different between the two groups, either. The proportion of patients who required fentanyl twice was lower in the normal BIS group than in the low BIS group; however it had no statistical significance (5.9% vs 14.3%; RR 0.375; 95% CI 0.06-2.22; P = 0.265).**Conclusion:** Intraoperative anesthetic depth did not affect the occurrence of EA in pediatric patients undergoing strabismus surgery under the general anesthesia.

EP-PED-497

Analysis of referral reasons to the pediatric ophthalmological department

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Purpose: To characterize the pediatric population that was referred to the hospital and to evaluate the coincidence between the reason for referral and the final diagnosis.

Methods: Retrospective study based on clinical data of patients aged 0-18 years old, that were referenced to pediatric ophthalmological consultation, in 2013. A subgroup composed with patients with coincident reason of referral and hospital diagnosis was created. We analyzed the concordance between the two medical evaluations in this group.

Results: We have a total of 1430 patients and 55,6% of them were referenced by Primary Health Care professionals. Almost 50% (44,5%) of the patients didn't reveal any abnormality in the hospital evaluation. There was a moderate concordance between the two evaluations.

Age was the only predictor that contributed independently to a coincidence between the two evaluations.

Conclusions: This study demonstrated that for each one month increase there is an increased probability for the coincidence between the two medical evaluations. Literature suggests that there are many difficulties in detection of visual problems in younger children and a tendency for increased diagnostic accuracy with increasing age.

EP-PED-498

Duane syndrome: clinical analysis and surgical results - our experience

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Purpose: To clinically characterize a group of patients presenting with Duane's Syndrome and to analyse the surgical outcome of the surgically treated cases.

Methods: We performed a retrospective study of 44 patients diagnosed with Duane's Syndrome that were followed in the strabismus consultation of our Hospital. The evaluated characteristics were: age at diagnosis;

Duane's Syndrome type according to Huber's classification; deviation in the primary position of gaze; presence/absence of torticollis and anomalous vertical movements (upshoot/downshoot); surgically treated cases and their results.

Results: The mean age at the time of diagnosis was: 8.6 years. 38 patients (86.36%) were classified as type I, 3 patients (6.82%) as type II and 3 patients as type III. 59.1% were female. 90.91% of the cases were unilateral and the left eye was the affected eye in 65.91%.

28 patients (63.64%) presented with endotropia, 10 (22.73%) were orthotropic and 6 (13.6%) showed an exotropia. 28 patients had a compensatory torticollis and 12 patients (27.27%) exhibited an upshoot and/or downshoot movement. 19 patients (43.18%) were operated on due to an anaesthetic deviation and/or torticollis and/or anomalous vertical movement.

In 16 cases (84.21%) there was an improvement: on the deviation in the primary position of gaze, torticollis and upshoot/downshoot movement. Post-surgery, six patients showed a deviation < 10 prismatic diopters (PD) and had no torticollis.

Conclusions: As reported in the literature, the results obtained in this study showed a greater prevalence of type I of Duane's Syndrome, as well as a majority of cases affecting the female gender and the left eye.

In most cases, correction of the deviation in the primary position of gaze allowed to correct or improve the torticollis. Surgical treatment seems to be effective in eliminating abnormal vertical movements.

EP-PED-499

Screening of amblyopia: analysis among preschool and school children in the city of Tuzla, Bosnia and Herzegovina

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Purpose: This study measured the prevalence of amblyopia in preschool and school children between 4 and 15 years of age in Tuzla, Bosnia and Herzegovina and as well and to examine its relations with anisometropia and strabismus.

Method: Children from eight daycare centers and twenty four elementary schools were screened for amblyopia by volunteer personnel (medical students), any child who failed to pass the screening examination, was referred to the ophthalmologist for complete examination at University Clinic Center Tuzla. The examination included VA, stereopsis, cover testing, refractive retinoscopy, and examination of the red reflex and posterior pole.

Results: Total of 7415 children, which included 3790 males and 3625 females, in the age range of 3 to 15 years from 24 schools and 8 preschool were screened. Fifty eight children (1.9%) were diagnosed with amblyopia, unilateral in 28 and bilateral in 31.

Conclusion: Prevalence of significant refractive errors is high enough to justify a school eye screening program solely for this purpose. preschool and school screening program in children in critical period of development of amblyopia must be conducted to find out the ametropias and amblyopia in time; and treat them earlier.

EP-PED-500

Croatian national preventive program of early amblyopia detection

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Purpose: To present National Preventive Program of Early Amblyopia Detection in Croatia.

Method: Between September 2011 and June 2014, ZAPS study using Lea Symbols in lines charts to test near and distance visual acuity (VA) of 15,648 children aged 48-54 months attending kindergartens in the City of Zagreb was conducted. The pass cut-off level was defined to ≤ 0.1 logMAR. The aims were to determine the estimated prevalence of amblyopia in Croatia, testability, sensitivity and specificity of the protocol.

Results: The estimated prevalence of amblyopia in Croatia was 8.08%. Testability rate using ZAPS study protocol was 99.19%, with sensitivity and specificity rates of 100.00 % and 96.68% respectively. 78.04% passed the screening, setting the age-specific normative threshold for determining abnormal monocular VA in preschool children aged 48-54 months using Lea

Symbols in lines chart to >0.1 logMAR. The ZAPS protocol satisfied the prerequisites of high testability, high sensitivity and high specificity that are constituents of an efficient screening test. From January 1st 2016, vision screening of all 4-year-old children performed in ophthalmologists' practices has been introduced as the National Preventive Program of Early Amblyopia Detection based on the ZAPS study protocol.

Conclusion: The ZAPS study changed the national recommendations for health surveillance in Croatia in favor of VA assessment of 4-year-old children advocating for National Preventive Program of Early Amblyopia Detection. The pass level defined at ≤ 0.1 logMAR for 4-year-old children using Lea Symbols in lines missed no amblyopia cases, hence both near and distance VA testing using in lines chart is performed when screening for amblyopia in Croatia. September 12th is celebrated as the Croatian National Amblyopia Day, and Croatian National Amblyopia Registry is currently under development.

EP-PED-501

Visual and refractive outcome after 7 years of treatment of type 1 prethreshold retinopathy of prematurity (ROP) in Plovdiv region

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Purpose: To present the best corrected visual acuity (BCVA) and refraction in prematures after 7 years of treatment of type 1 prethreshold ROP in Plovdiv region and compare the results between laser and cryotherapy.

Method: Since year 2009 160 eyes of 81 prematurely born children were treated for type 1 prethreshold ROP and were prospectively followed up. Mean (range) gestational age was 28.5 wg (24 - 33), and mean (range) birth weight - 1099 grams (570 - 1730). Cryotherapy was applied on 59 eyes, laser - in 79, anti-VEGF - in 4 and surgery - in 18. Twelve children (24 eyes) were lost to follow up. BCVA was tested in 51 eyes and refraction - was tested in 84 eyes.

Results: Twenty eyes showed BCVA between 0.5 - 1.0; 11 eyes - between 0.4-0.1; 12 eyes < 0.1 ; 4 eyes showed light perception and 4 eyes were blind. Thirty one of 51 eyes showed VA > 0.1 . There was no statistically significant difference in BCVA between laser and cryo groups. Myopia (any myopic refraction) was found in 15 eyes; hyperopia ($> +2 D$) - in 3; astigmatism (difference between the two principal meridians $> 0.75 D$) - in 49 and emmetropia - in 17 eyes. In laser treated group considerably more eyes showed emmetropic refraction and less eyes showed myopic refraction with borderline statistical significance (Fisher's exact test, $p=0.054$).

Conclusion: Timely treatment of type 1 prethreshold ROP leads to very good anatomical and functional results. Laser treatment leads to better refractive outcome compared to cryotherapy.

EP-PED-502

To investigate the prevalence of strabismus types in strabismic patients

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Purpose: To determine the frequency of different types of strabismus and amblyopia in patients of strabismus clinic from 2008 to 2015.

Method: This retrospective cross-sectional study was conducted using data from the archives of Farabi hospital in Tehran, Iran from 2008 to 2015. In this study, from the records of strabismic patients, strabismus types and associated abnormalities, kind of amblyopia and other ocular pathological findings were recorded.

Results: In this study, 1,174 strabismic patients were studied.

The "Accommodative Esotropia (ET)" is the most prevalent type of strabismus reaching 25.04% of all strabismic patients and "Intermittent Exotropia (XT)", "Non accommodative ET" and "partially accommodative ET" respectively with 12.09, 11.24% and 10.39% were relatively common, while 63.03% of all strabismic patients has esodeviation and exotropia comes second reaching 24.53 percent. 236 patients (20.1%) had other ocular pathologic findings in addition to strabismus. The most common association with those types of strabismus was inferior oblique overaction reaching 11.07% of all cases and 88 patients had nystagmus in addition to strabismus. 45% of patients had no amblyopia and 37% of patients had combine type of amblyopia that is most common types of amblyopia in strabismic patients.

Conclusion: As almost half of strabismic patients suffer from amblyopia this study suggests that strabismus screening of children could be useful in early detection of strabismus, appropriate management of it and prevention of strabismic amblyopia.

EP-PED-503

Surgical treatment of severe Brown syndrome

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Purpose: To report Surgical treatment of Brown Syndrome

Method: N.K is a small girl who was diagnosed as a Brown Syndrome.

There was a difficult case so we could get consultation to Cybersight-Telemedicine.

Surgical treatment;

First surgery: Full tenotomy of Superior Oblique Muscle in affected Eye
Some months later we performed Recession of Inferior Rectus Muscle in the same eye

Results: After surgeries, patient could keep her head and her eyes straight. Ductions and versions are not limited.

We could distinguished a mild traction in the lower eyelid even we tried to dissect connective tissue during the second surgery.

Conclusion: Severe cases diagnosed as Brown Syndrome could get surgical treatment successfully.

EP-PED-504

Treatment and prophylaxis of acquired myopia progression through physiotherapeutic treatment combined with orthokeratology

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Purpose: To study the dynamics of myopia in school-age myopic patients that undergone physiotherapy in complex with orthokeratology for 2 years, and find possible mechanisms of myopia control.

Materials and methods: The study group included 53 patients (103 eyes), between the ages of 7 to 19 years old (in average 15,2±4,2 years old), with myopia in the range of -0.75 D to -6.25 D (-3.53 ± 1.55 D on average). The average of axial length of the eye was 24.46 ± 0, 98mm.

The patients went through physiotherapy in complex with orthokeratology for 2 years. During the 10 (ten) day treatment period, each day the general and local biologically active points of the eye are electrically stimulated for 1 minute. Next step is a 4 (four) minute ciliary muscle stimulation using helium-neon laser radiation of low intensity. After the completion of the 10 day treatment described above, 1 year of orthokeratology follows.

All of them received a full clinical investigation prior to beginning of the treatment which included: visiotest, biomicroscopy, ophthalmoscopy, autorefraktometry computerized perimetry, non contact tonometry, biometry, topography, positive relative accommodation.

Results: The average clinical refraction at the beginning of the treatment was -3.53 ± 1.55 D, and after 24 months it was - 3,64 - ± 0.27 D.

Positive relative accommodation before the treatment was -1.99 ± 1.33D. During the time there was noticed a substantial increase, at 3 months into the treatment it equalled to - 5.44 ± 0.9 D, at 24 months: - 5.73 ± 1.1 D. The axial length of the eye before the treatment was 24.46 ± 0.98 mm. After 24 months it was 24.54 ± 1.16 mm.

Conclusions:

- physiotherapy in complex with orthokeratology produce high, stable, and predictable results.

- During the physiotherapy in complex with orthokeratology myopia progression has the tendency to significantly decrease, that being estimated through measurements on the axial length of the eye.

EP-PED-505

A study of visual impairment among primary school children in Herat, Afghanistan

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Purpose: To identify visual impairment among primary school children in Herat, Afghanistan.

Method: The vision of school children was examined by ophthalmic technicians for visual acuity at schools of Herat city. All visual acuity testings were recorded in a specifically designed form for this research. Statistical analysis were performed using StatistiXL package. A *p* value of less than 0.05 was considered statistically significant.

Results: Of the 2797 students, 1848 (66.07) were boys and 949 (33.93%) were girls. 45 (1.60%) were 5 years old, 336 (12.01%) were 6 years old, 842 (30.10%) were 7 years old, 775 (27.70%) were 8 years old, 661 (23.63%) were 9 years old and 138 (4.93%) were 10 years old.

Of all students examined, 619 (22.13%) of the examined students had visual impairment. Of these, 421 (15.05%) had a 6/9 vision, 98 (3.50%) had 6/12

vision, 90 (3.22%) had 6/18 vision, 39 (1.39%) had 6/24 vision, 20 (0.72%) had 6/36 vision and 1 (0.04%) had 6/60 vision. None of the examined students were suffering from a lower than 6/60 vision. An increase in the prevalence of refractive error was noted with increasing age.

Conclusion: A significant number of school students were suffering from visual impairment in Herat city. No significant difference was observed between the rate of visual impairment in boys and girls.

EP-PED-506

Vernal keratoconjunctivitis. How to overcome it?

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Purpose: To report a case of vernal keratoconjunctivitis (VKC) and to evaluate the efficacy and safety of topical 0.05% cyclosporine in the treatment of VKC.

Method: A 12-year-old male presented to our clinic with bilateral ocular itching, pain and photophobia. The following symptoms presented for two months time and did not significantly reduce on use of topical steroids, topical and systemic antihistamines, mast cell stabilizers and artificial tears. Total serum *IgE* level was elevated. Topical cyclosporin 0.05% four times daily was added as a result of inadequate response to treatment.

Results: At presentation slit lamp examination revealed conjunctival hyperemia, diffuse papillary hypertrophy on superior tarsus and formation of cobblestone papillae in both eyes.

After four months of treatment, severity of all symptoms and signs decreased. Use of steroids was reduced. No significant side effects of cyclosporine were recorded.

Conclusion: Topical 0.05% cyclosporin is safe and effective for the treatment of VKC as a steroid-sparing agent. It helps to obtain good clinical response without serious adverse effects. Further studies are needed to determine the optimal duration of therapy and the possibility of recurrences.

EP-PED-507

Astigmatism progression in Mexican patients between 3-14 years old at the Hospital Civil de Guadalajara "Fray Antonio Alcalde" measured by keratometry and refractive error

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Purpose: Describe the astigmatism progression in pediatric patients of the Antiguo Hospital Civil De Guadalajara "Fray Antonio Alcalde" by keratometry measurement and refractive error during the period of March to November 2015.

Method: Longitudinal, descriptive and observational study. A 27 patients sample was collected from the Pediatric Ophthalmology Department to determine through keratometry the astigmatism progression, as well as their classification and comorbidity with squint or amblyopia. The measurement was performed by auto querato-refractometer Humphrey model 599 of Carl Zeiss Co., we used a 3.5 V Welch-Allyn retinoscope 18200 for screening the refractive errors. For analysis of data we used a Fisher's exact test with confidence interval of 95%.

Results: 27 patients were analyzed according to inclusion criteria, we found a sample with a mild male predominance of 12%. The most common astigmatism type was the compound hyperopic astigmatism in 48% and with-the-rule classified by axis in 79%. We found an astigmatism progression in the 38% of the sample during a period of 9 months, 0.74 diopters was the progression average with a p-value 0.128 (statistically no significant). The main age group was 6-8 years old in 59%. The predominant visual acuity rank was 20/50-20/80 with an average visual capacity improvement of 3 lines. Amblyopia was present in 18% leading by anisometropia and strabismus.

Conclusion: There was progression of astigmatism in this study, but no significance for the established time ($p=0.128$). The requirement of a major sample and time is priority to demonstrate that the progression of the astigmatism is directly proportional to diopters greater than 1.5.

EP-PED-508

Excimer laser correction for myopic anisometric amblyopia in pediatric patients

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Purpose: To evaluate the efficacy, predictability, safety, stability, visual acuity and binocular vision results of laser-assisted subepithelial keratectomy (LASEK) and photorefractive keratectomy for the correction of high myopic anisometropia and amblyopia in children.

Method: This retrospective study comprised 195 eyes of 195 pediatric patients that had LASEK or PRK for high myopic anisometropia from -5.5 to -11.5 D operated between 2000-2012. All children were unable to use spectacles due to aniseikonia, and they were noncompliant with contact lenses. They were at 3 to 8 years of age in time of surgery. All patients were treated by Nidek EC 5000 excimer laser-multizonal ablation technique. In all children surgery was followed by a half-day patching of the dominant eye. Main outcome measures were cycloplegic refraction, uncorrected and best spectacle-corrected visual acuity (UCVA, BSCVA resp.), corneal clarity and grade of stereopsis over 2 to 12 years of follow-up.

Results: The preoperative mean spherical equivalent (MSE) was -8.32 ± 2.57 . The postoperative MSE was -1.21 ± 0.83 D at the last visit. The mean preop UCVA 0.033 ± 0.016 increased to 0.59 ± 0.17 postop. The mean preop BSCVA was 0.38 ± 0.23 and changed to 0.89 ± 0.22 postop. All the eyes had no line lost in BSCVA, 60 eyes had two lines gained 56 and 79 eyes had 3 and 4 or more lines gained respectively. Preoperative spectacle aniseikonia decreased from 11,6 % to 2,1 % postoperatively. Binocular vision and grade of stereopsis was improved and saved in 86 % of pediatric patients. All eyes have clear cornea without haze at final examination.

Conclusion: Pediatric LASEK and PRK are highly effective and safe methods to reduce myopic anisometropia up to -12 D, decrease spectacle aniseikonia, improve visual acuity and stereopsis in children aged 3 to 8 years with amblyopia when contact lens intolerance.

EP-PED-509

Posterior scleritis in two paediatric patients with initial headache and conjunctivitis diagnoses

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Posterior scleritis is rare in children and it is frequently underdiagnosed. The disease presents itself in a broad range of ocular findings. There can be obvious retinal changes or uveitis and decrease in vision, otherwise normal visual acuity and no pathology on ophthalmic examination have been reported. With only sporadic exceptions, severe ocular pain is the main distinguishing feature. The poster reports 2 pediatric cases of posterior scleritis of a 16-year-old male child and a 10-year-old female child.

In these cases the main complaint was headache, not eye pain. In both cases children were treated for conjunctivitis initially. Both cases underwent a complete ophthalmic examination, B-scan ultrasonography, and a systemic evaluation. No associated systemic diseases were found. Both cases showed partial response to NSAIDs and good response to oral steroid.

EP-PED-510

Validation of computerised Thomson-Xpert-3Di, ETDRS and contrast sensitivity tests in paediatric ophthalmology outpatients

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Purpose: New computerised screening tools for vision assessment have many advantages over the standard printed charts. The Thomson Test Chart Xpert-3Di is one of the latest versions of a computerised test chart. The aim of this study was to validate visual acuity (VA) and contrast sensitivity (CS) data measured using computerised Thomson-LogMAR test and Thomson-CS test against the Early Treatment Diabetic Retinopathy Study (ETDRS) chart and the Pelli-Robson respectively.

Method: The habitual vision of 55 school-aged children was measured using computerised Thomson-LogMAR test, Thomson-CS test, ETDRS chart and Pelli Robson chart. Each subject underwent monocular assessment of both VA and CS in random order. The methods of Bland and Altman were used to analyse agreement.

Results: 107 eyes were tested in 55 children with a mean age of 8 years and a range of visual acuity from -0.20 to 1.30 logMAR. VA was lower when measured using the Thomson-LogMAR compared to the ETDRS, mean difference of 0.06 logMAR ($P = 0.001$) with 95% limits of agreement of -0.29 to 0.17. For CS, the Thomson-CS was on average lower than the Pelli-Robson, mean difference of 0.30 log units ($P = 0.001$) with 95% limits of agreement of -0.06 to 0.66.

Conclusion: This study found the computerised Thomson tests were not comparable with the standard ETDRS and Pelli Robson charts used in clinical practice. For VA, an average difference of three letters may not be clinically relevant and hence the Thomson-LogMAR may be used in parallel with the ETDRS chart in the clinic. The Pelli-Robson and Thomson-CS test scores should not be used interchangeably.

EP-PED-511

Visual acuity assessment in preschool children with three different charts: Lea, Crowded Lea, Snellen E*Gokyigit B.¹, Inal A.¹, Ocak O.B.¹, Aygit E.D.¹, Celik S.¹, Inal B.²*¹*Beyoglu Eye Training and Research Hospital, Istanbul, Turkey,*²*Okmeydanı Training and Research Hospital, Istanbul, Turkey*

Purpose: To compare Snellen E chart, single Lea symbols and crowded Lea symbols which are used to measure visual acuity in children.

Method: In this study, 108 eyes of 54 patients (29 girls, 25 boys) whose visual acuity measurements were performed by Snellen E chart, single Lea symbols and crowded Lea symbols in Pediatric Ophthalmology and Strabismus department of our hospital were evaluated. The value obtained was converted to logMar equivalent. Statistical assessments were performed by using SPSS® version 18.0.

Results: Enrolled patients' mean age was $5,72 \pm 0,73$ (between 5-7 ages). Mean spherical equivalent measurement of patients was determined as $+2,74 D \pm 2,61 D$. Mean visual acuity values of the patients were calculated as $0,222 \pm 0,263$, $0,221 \pm 0,261$ and $0,222 \pm 0,257$ logMAR with Snellen chart, single Lea symbols and crowded Lea symbols, respectively. Friedman test was applied to compare these three methods and the tests were found to be consistent.

Conclusion: Snellen E chart, single Lea symbols and crowded Lea symbols were evaluated in measurement of pre-school visual acuity and the results obtained with all these methods were found to be consistent. According to the results we obtained from our study, all the three methods can be used in measurement of visual acuity in children.

EP-PED-512

Clinical features of the patients who had adjustable surgery for strabismus*Gokyigit B., Ocak O.B., Inal A., Celik S., Aygit E.D., Ozcelik F.**Beyoglu Eye Training and Research Hospital, Istanbul, Turkey*

Purpose: To evaluate the types of strabismus and amount of postoperative adjustment of the patients who had adjustable strabismus surgery.

Method: In this retrospective study, the patients whom surgery were performed with adjustable surgery between December 2014 and December 2016 were included. We documented age, sex, diagnosis, preoperative squint angle. After 24 hours following the surgery all the patients were examined under topical anesthesia and the strabismus examination were repeated and according to the results we either fixed the sutures or adjusted them. We recorded the cases who needed adjustment or not. Their results were evaluated according to their diagnosis.

Results: 51 patients included in this study. 27 of them were male 24 were female. Mean age was 32.42 ± 14.25 (range 14-72 years). 31 patients had consecutive exotropia (XT), 5 had exotropia, 10 had vertical strabismus, 5 had consecutive esotropia (ET). Only 6 patients needed additional adjustment. Three of them had horizontal strabismus (% 7.31) and the other 3 had vertical strabismus (% 30). Besides these patients none of them needed adjustment nor additional surgery.

Conclusion: We noted that vertical strabismus needed more adjustment than horizontal strabismus.

EP-PED-513

Congenital fibrosis of extra ocular muscles (CFEOM).**Case report of a family from Albania***Suljoti B., Tonuzi A.**Qendra Shqiptare E Syve, Tirane, Albania*

Purpose: Congenital fibrosis of the extraocular muscles (CFEOM) describes a group of rare congenital eye movement disorders that result from the dysfunction of all or part of the oculomotor (CN 3) and the trochlear (CN 4) nerves, and/or the muscles these nerves innervate.

Method: A retrospective chart review was performed of all the members of Dorzi family patients who had been diagnosed with CFEOM in our clinic. All patients had undergone standardized orthoptic and ocular evaluations and one of them had surgery in one eye.

Results: The twelve patients (age range 5 years - 75 years) presented a history of congenital strabismus. All patients had severe bilateral ptosis and mild to moderate visual impairment secondary to the ptosis and astigmatism. A moderate to large angle exotropia with varying amount of hypotropia and limitations of almost all the extra ocular muscles was noted. Patient number 1 was also developmentally delayed.

Conclusion: CFEOM is a rare, congenital, and non-progressive disorder with multiple extra ocular muscle restrictions. CFEOM can be associated with neuro-radiological abnormalities; its diagnosis and classification is defined by clinical characteristics and genetics. Options for treatment are limited and difficult, and results of surgery are unpredictable. Strabismus surgery is always attempted before ptosis correction. The expectations of strabismus surgery should be realistic and parents and patient should be well informed about these expectations.

EP-PED-514

Surgical outcomes in a series of five cyclic esotropia patients*Gokyigit B., Celik S., Inal A., Ocak O.B., Aygit E.D.**Beyoglu Eye Training and Research Hospital, Istanbul, Turkey*

Purpose: Cyclic esotropia is a rare form of strabismus characterized by alternating periods of esotropia and orthophoric (or almost orthophoric) eye position. Herein, we introduce five children with cyclic esotropia and their surgical treatment results.

Method: In our archives we scanned 41.250 files. In this retrospective study five children with esotropia appearing in 24 hours cycle were included. Three of them were boys and two of them were girls. Two children had been operated in another centre but we still determined cyclic esotropia component in a less amount compared to amount of deviation given in the epicticrisis. All cases had a large angle of deviation and associated suppression on the esotropic day and small angle of deviation with fusion on the other day. For all cases we planned strabismus surgery according to the amount of deviation on the esotropic day.

Results: Following surgery we obtained orthophoria in all cases. All of the eyes remained straight during the follow up period.

Conclusion: Considering cyclic esotropia, we found that in our series, best surgical results can be obtained when surgery is planned according to the amount of deviation on the esotropic day.

EP-PED-515

Botulinum toxin augmented squint surgery for infantile esotropia - a case controlled study*Shinh R., Parulekar M.V.**Birmingham Children's Hospital, Eye Department, Birmingham, United Kingdom*

Purpose: A retrospective non-randomised case control study to compare surgical outcomes of bi-medial rectus recession augmented with botulinum toxin injection versus bi-medial rectus recession alone for large angle infantile esotropia.

Methods: 22 patients with large angle infantile esotropia undergoing bi-medial rectus recessions augmented with intra-operative botulinum toxin injection (group1) and 20 patients undergoing bilateral medial rectus recession surgery alone (group2) were included. Pre-operative and post-operative orthoptic assessments, surgery and complications were reviewed. Outcome measures were post-operative deviation, need for additional surgery and improvement in abduction if restricted pre-operatively.

Results: Both groups were matched for other variables including absence of amblyopia, refractive status, surgical dose (5.5-6.0mm recessions) and technique, and duration of follow up. The mean age at surgery was 16.2 months for group1 and 24.8 months for group2. The mean pre and post-operative angles were 50.0ΔBO and 8.5ΔBO for group1 and 43.6ΔBO and 16.0ΔBO for group2. The mean follow up period was 36.1 months for group1 and 42.4 months for group2. Reoperation rates were 4.5% and 30.0% in group1 and 2 respectively, with an odds ratio of 9.0. Of the cases with limited abduction, 72.7% in group 1 and 40.0% in group2 improved post-operatively. 2 patients in group1 developed transient ptosis which recovered within 1 month. 5 patients in group1 developed adduction limitation, resulting from botulinum injection, which resolved in 1.6 months (mean).

Conclusion: Surgical results were significantly more favourable for group1 than group2 with smaller and stable residual angle of strabismus and minimal risk of consecutive exotropia. Botulinum toxin augmentation of bi-medial recession surgery is a safe and effective procedure, and significantly reduces the need for further surgery in large angle infantile esotropia.

EP-PED-516

Botulinum toxin-A in the treatment of childhood esotropia*Tsertsvadze N.¹, Ramazashvili M.¹, Kataev M.², Khurtsilava T.¹, Saralidze T.¹**¹IQ Clinic, Tbilisi, Georgia, ²Fyodorov Eye Microsurgery Complex, Moscow, Russian Federation*

Purpose: The aim of research is to find out: Is BT-A injection safe and effective for children? What are the side effects and if it appears how long does it last? Is there correlation between botulinum toxin dosage and deviation degree?

Method: The research is based on retrospective analysis of each clinical case. 2013-2016 yy in 8 patients were used Dysport injection, age range 2-6y/o. Majority of the patient had the diagnosis acquire alternative esotropia, only one patient had infantile esotropia. Previously, none of them had strabismus surgery. Deviation was 5-40 degree. The Dysport injection dosage was 6-40 units simultaneously into both MR. After general anaesthesia Dysport was injected by 27G needle under direct vision through a small conjunctival incision.

Results: The research indicates that the usage of Dysport injection is safe. Orthophoria was reached after 2-6 month in 5 patients. The side effects: In 2-5 days after injection asymmetric ptosis appeared in all patients, and wore off in

1-2 months; one patient noticed diplopia that wore off in 10 days; exotropia- "the effect" occurred in 7 cases during 3-7 days (6 of patients developed transient overcorrection and one of them need surgery about exotropia); no infection; no perforation; no retrobulbar hemorrhage; no anterior segment ischemia; no allergy reaction. Research did not indicate direct proportional correlation between toxin dosage and alignment degree.

Conclusion: We found that Dysport injection is safe. The most effective solution is using 8-10 units of Dysport in small-angle deviation (5-10 degrees). We noticed that in patients who had Myopia and large-angle deviation using Dystort 15-40 units caused non-transient exotropia. In patients who had high Hyperopia using Dysport 6-8 units were not enough. We think Refractive errors should be taken into account. In case of angle - 15dg and more, after injection we reached decreased deviation and hope to preserve LR for future surgical options.

EP-PED-517

Extra ocular muscle sliding plication: a novel operation technique*Gokyigit B., Inal A., Aygit E.D., Ocak O.B., Celik S., Yildirim Y., Yilmaz I.**University of Health Science, Istanbul Beyoglu Training and Research Eye Hospital, Istanbul, Turkey*

Purpose: In some indications patients need both extra ocular muscle transposition procedure with resection and the blood supply protection for preventing anterior segment ischemia. Taking these needs into account, we have developed an effective method of delivering both vascular protection and strengthening of the muscles, as well as the transposition of the muscles. In this study, we want to present a novel operation technique that will meet all these needs.

Method: There were 12 patients operated on with this new technique. The patients' files were scanned retrospectively. All patients underwent complete eye examinations both preoperatively and postoperatively. Patients' deviations were measured with prism cover and alternate prism cover tests. 4 cooperated case deviations also were measured with synoptophore. Follow up of patients were at least six months.

Operation technique: After being exposed and the rectus muscle is freed from the facial structure as far as planned resection amount. 6-0 coated vicryl sutures are then placed through the two sides of the muscle while protecting the blood vessels. Then, each suture is placed close to the muscle insertion and is aimed at transposition side. For example, if the target is to transpose the superior rectus at temporal side, nasal side suture is placed at temporal edge of muscle insertion and temporal side suture is placed approximately a tendon width laterally to the insertion.

Results: In patients who were planned resection 7 mm and over, the procedure for complete muscle widening transposition was successful. Only 2/3 transpositions could be achieved in 4 patients who underwent less than 7 mm of strengthening. There was no anterior segment ischemia in 3 patients who underwent 3 rectus muscle surgery in the same eye.

Conclusion: Sliding shape design extra ocular muscle plication found simple, safe and effective procedure for patients who needed resection and transposition operation.

EP-PED-518

Congenital dacryocystocele complicated by dacryocystitis

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Purpose: To report a case of congenital dacryocystocele successfully treated in an infant.

Method: A single case report

Results: A 2-day-old otherwise healthy male infant was referred to our ophthalmology department after noticing a blue mass in the region of his right lacrimal sac without epiphora. Ophthalmological examination found a transilluminable cystic mass in the right inner canthus, measuring 12mm of diameter without pressure reflux. A diagnosis of congenital dacryocystocele was made and the only digital massage had failed.

An attempt of large endoscopic marsupialization was complicated with an acute dacryocystitis which required a medical treatment using intravenous antibiotics and a second endoscopic marsupialization at the age of 25 days. No recurrence was reported after a follow-up period of 8 months.

Conclusion: Congenital dacryocystocele is an uncommon type of nasolacrimal duct obstruction. Potential complications may occur when these dacryocystoceles extend intra-nasally. Since the vital prognosis is involved, aggressive treatment is recommended.

EP-PED-519

Blepharophimosis Ptosis Epicanthus Inversus Syndrome (BPES): a case report

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Purpose: To report an interesting case of a newborn baby with chromosome abnormalities and Blepharophimosis Ptosis Epicanthus Inversus Syndrome (BPES)

Method: Neonatology asked ophthalmology to review a premature (35wk+2) female baby because her mom reported that she would not open the eyes. The baby had been diagnosed with chromosome 4:14 translocation, chromosome 5q deletion, partial agenesis of inferior vermis and mild ventriculomegaly. She had cleft palate and dysmorphic features. She developed viral infections, breathing difficulties and subsequently had tracheotomy. Upon examination she was found to have blepharophimosis, ptosis, epicanthus inversus and telecanthus. In this first examination she was found to have bilateral nystagmus. Normal treatment for this would be to reverse some of these features through brow suspension eyelid surgery. However, she was unfit for surgery. Moreover, she was unable to adopt the compensatory head posture as she was in a horizontal position at most times due to the systemic and neurological delay.

Results: Conservative treatment of vision deprivation amblyopia with paediatric spectacles, ptosis props and paediatric soft contact lenses worn on an extended wear basis was commenced until she was fit to undergo eyelid surgery.

Conclusion: After 18 months of conservative treatment and a successful brow suspension operation, this little baby developed useful vision.

EP-PED-520

The evaluation of a new optotype paediatric contrast sensitivity test

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Purpose: Many paediatric conditions exist where Contrast Sensitivity (CS) is defective despite 'normal' visual acuity (VA). A loss of CS has been found to be more prominent than a loss of VA, emphasising the need for an effective paediatric CS test. Current paediatric CS tests have failed to demonstrate the same standards, repeatability and reliability as adult CS tests.

The aim of this study was to evaluate a new paediatric optotype CS test.

Method: Adult participants were assessed binocularly wearing their habitual correction. Participants underwent a VA assessment using a standard letter LogMAR test (presented on a PC using the Thomson software), with the optotypes randomised between tests. CS was assessed with the Pelli Robson (PR) at 1m and a newly developed Kay Picture (KP) optotype CS test at 40cm.

The KP CS test consisted of triplets of optotypes consistent with the contrast levels on the PR. CS was scored per optotype for both tests (0.05LogCS) and assessed under normal conditions.

Test order was randomised between participants. All tests were repeated to assess test retest reliability.

Results: Resolution acuity at distance were assessed in 35 healthy participants aged 17-55years (24.1±SD9.6) with normal VA (-0.07±SD0.14LogMAR). The mean values for the PR under normal conditions were similar to previously reported adult norms (1.79±0.11LogCS).

A statistically significant difference was shown between the PR and the KP CS test under normal conditions (Paired samples t test: PR:1.92±0.09LogCS; KP:2.00±0.11LogCS, t=-5.96, p<0.0001).

Bland Altman analysis between the PR and KP CS test showed a mean bias of 0.08, with limits of agreement from -0.08 to 0.24.

Test retest data for PR shown a TRV of 0.09LogCS and 0.12LogCS for KP CS test.

Conclusion: The initial data suggests the Kays CS test does appear to be of value and currently holds the highest agreement with the PR compared to other paediatric CS tests.

EP-PED-521

Cytomegalovirus retinitis in an infant with severe combined immunodeficiency - a case report

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Purpose: Congenital and perinatal cytomegalovirus (CMV) infection are an important cause of morbidity in immunocompromised infants, affecting multiple organs. CMV retinitis (CMVR) is typically characterized by a necrotizing retinitis. The authors present a case of perinatal CMVR from our institution.

Methods: A 3 month-old female infant diagnosed with severe combined immunodeficiency syndrome and disseminated CMV infection underwent ophthalmological observation for the presence of CMVR. Fundus examination was recorded and monitored by digital ocular imaging.

Results: At diagnosis, fundus examination revealed bilateral, multiple foci of active retinitis in the posterior pole and mid-periphery, with a focus of periphlebitis in the superior temporal retinal vein in her right eye, and a juxtafoveolar lesion in the left eye. No vitritis was observed. Systemic ganciclovir and foscarnet therapy was initiated, and at week 7 of follow-up retinal lesions showed progression to scarring.

Conclusions: Perinatal CMV infection contributes to further morbidity in infants with severe immunodeficiency syndromes. CMVR is usually bilateral and severe in the pediatric population, and early aggressive systemic antiviral therapy is warranted to arrest progression of retinal disease. Digital ocular imaging is a valuable tool in the evaluation of disease activity and in monitoring disease progression in infants. Long-term follow-up is indicated to monitor visual development and to detect disease recurrence.

EP-PED-522

Retinitis pigmentosa sine pigmento with global retinal dysfunction

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Purpose: To describe a case of a probable retinitis pigmentosa sine pigmento with global retinal dysfunction in an 11-year-old female patient.

Methods: An 11-year-old female patient presented with complaints of nyctalopia and progressive peripheral visual field loss. There was no relevant past medical history or known ophthalmic familial disease. We performed ophthalmic exam with fundoscopy, visual field testing, optical coherence tomography (OCT) and electrophysiology tests.

Results: The patient was orthophoric, had a best corrected visual acuity of 7/10 and normal pupillary reflexes and extraocular movements in both eyes. Anterior segment examination was normal.

Fundoscopy revealed abnormal foveal reflexes and mottled fundi with atrophy of the retinal pigment epithelium (RPE) in the peripheral retina bilaterally. There were no significant optic disc changes, retinal vessel narrowing or pigment deposit. OCT showed perifoveal loss of the IS/OS line. Visual field testing by standard automated perimetry with a central 10-2 test and V white stimulus showed severe bilateral visual field constriction, with a small 5° island of central vision.

There was a global retinal dysfunction demonstrated by the multifocal electroretinogram and the Arden ratio of the electrooculogram was significantly subnormal (1.04 in the right eye and 0.99 in the left eye).

The patient was referred to a low vision clinic and there was no progression of the disease during a 2-year follow-up.

Conclusion: Retinitis pigmentosa sine pigmento is thought to be a variant or an early manifestation of retinitis pigmentosa in which there is an absence of the characteristic peripheral pigmentary changes. We present an uncommon case of this disease with global retinal dysfunction demonstrated by the electrophysiology tests.

EP-PED-523

Inferior oblique anterior and nasal transposition surgery in featured cases

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Purpose: Surgical management of ocular alignment in patients such as Duane Retraction syndrome (DRS), Dissociated Vertical Deviation (DVD) and Thyroid associated ophthalmopathy were difficulties. The objective of this article is present to results of inferior oblique anterior nasal transposition surgery in specific disease.

Method: In this retrospective study have 4 subjects ≥ 7 years of age.

Ophthalmologic and strabismus examination were done and all patients were underwent an inferior oblique anterior nasal transposition (ANT). Patients followed for at least 6 months postoperatively.

Results: All patients achieved acceptable and expected ocular alignment following surgery. These results were stable during to follow up.

Conclusion: Inferior oblique anterior nasal transposition surgery was easy to perform, have less complication and effective surgical procedure in specific disease.

EP-PED-524

Collaborative development of a care pathway for intermittent distance exotropia

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Purpose: To produce an evidence based collaborative care pathway for Intermittent Distance Exotropia (IDEX).

Methods: The University of Liverpool was approached by the Orthoptic managers from Northern Ireland (NI) to provide a continuing professional development (CPD) update in relation to the investigation and management of Intermittent Distance Exotropia (IDEX). A literature review of research published within the previous 20 years along with reviews of current professional body guidelines and competencies was carried out by academic staff at the University in relation to Investigation and Management of IDEX. Following this, an interactive update session and workshop was delivered in Northern Ireland in 2014. Input from NI Orthoptists based on local policies and protocols was added to the published evidence base in relation to investigation and management of IDEX and following the contact session, University Academic Personnel created the care pathway. The documentation was then circulated amongst NI Orthoptists for comments and amendments and subsequent to this, a care pathway flow chart was also produced by NI Orthoptists in consultation with University Personnel as a visual representation of the care pathway.

Results: This collaborative process has resulted in a care pathway based on current evidence base, clinical experience and local policies and frameworks. The pathway will be rolled out across NI with early feedback from clinicians positive in relation to its use in the clinical setting.

Conclusions: A systematic approach to this area of practice has enabled a standardised pathway to be devised that takes into account local policies as well as the current evidence base in order for clinicians to have some guidance for practice in this area.

EP-PED-525

Evaluating the association between birth parameters, myopia and SNPs in *RASGRF1* and *GJD2*

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Purpose: This study aimed to find associations between birth parameters, myopia and SNPs (single-nucleotide polymorphisms) in Gap Junction Protein, Delta 2 (*GJD2*) and RAS protein-specific guanine nucleotide-releasing factor 1 (*RASGRF1*) genes.

Method: In this study the Lithuanian twin population aged between 18 and 40 were examined (n=486). Information on birth weight, height and gestation age were obtained from a questionnaire filled by twins. Refractive error was measured with Sol. Cyclopentolate 1% using an autorefractor (Accuref-K9001, Shin-Nippon, Japan) and calculated by the mean spherical equivalent for the each of the two eyes of each individual. SNPs of the *RASGRF1* (rs8027411) and *GJD2* (rs634990) genes were assessed using the Applied Biosystems 7900HT Real-Time Polymerase Chain Reaction System.

Results: Carriers of the *RASGRF1* GG and GT genotypes had significantly lower birth gestational age at birth in comparison to the TT genotype carriers in myopia group. We didn't find significant associations with *GJD2* SNP and birth parameters.

Conclusion: We found that in myopia group individuals with one or two minor alleles in the *RASGRF1* had lower gestational age and height at birth.

ELECTRONIC POSTER PRESENTATIONS
REFRACTIVE SURGERY

EP-REF-528

Analysis of Wavefront data according to difference between planned optical zone & effective optical zone on Trans-PRK & LASEK using Amaris 1050RS Eximer laser

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Purpose: To compare the difference between topographic effective optical zone (EOZ) & planned optical zone (POZ) after Trans-PRK & LASEK for myopia & astigmatism Using Amaris 1050RS Eximer Laser. To analyze pre- & postoperative wavefront data according to difference between EOZ & POZ.

Method: 313 myopic eyes with or without astigmatism were treated Trans-PRK & LASEK. 189 eyes underwent Trans-PRK and 124 eyes underwent LASEK using Amaris 1050RS Eximer Laser. The difference between topographic effective optical zone (EOZ) & planned optical zone (POZ) after Trans-PRK & LASEK at postoperative 6 months was compared. We also compared with 3 groups according to POZ area (group I (>6.3mm), group II (5.8-6.3mm), group III (< 5.8mm)).

Pre- & postoperative wavefront data with Trans-PRK & LASEK were compared in terms of Root-mean-square (RMS), Spherical & higher order aberrations (HOAs).

Pre- & postoperative wavefront data and measurement of EAZ & POZ were performed with SIRIUS wavefront analyzer.

Results: Topographic EOZ after Trans-PRK was larger (7%) compared with POZ. The difference EOZ & POZ with Trans-PRK was stable (I:0.24±0.23, II:0.26±0.34, III:0.26±0.57mm) irrelevance of POZ. The EOZ after LASEK was smaller than POZ. The difference of group I (>6.3mm) was -0.46±0.24 mm, group II (5.8-6.3mm) was -0.25±0.14 mm and group III (<5.8mm) was -0.38±0.28 mm. The data of wavefront 5mm (RMS) after Trans-PRK improved compared with preoperative data. The data of wavefront 5mm (RMS) after LASEK was not showed statistically significant difference.

Conclusion: On average, Trans-PRK group resulted in 7% larger EOZ compared with POZ using Amaris 1050RS Eximer Laser. There was a significant improvement (12%) of wavefront data (RMS: 5mm) on Trans-PRK group compared with preoperative wavefront data. These results were considered that larger EOZ on Trans-PRK affected the improvement of postoperative wavefront data.

EP-REF-529

Validation of the Lithuanian translation of the NEI RQL-42 scale

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Purpose: To translate the original 42-item National Eye Institute Refractive Error Quality of Life Questionnaire (NEI RQL-42) into Lithuanian and determine the reliability and validity of the Lithuanian version of the NEI RQL-42 among Lithuanian patients with refractive errors.

Method: The linguistic translation was made according to the international guidelines of forward and backward translation. 47 subjects who reported refractive disturbances were included in the study, they filled the Lithuanian version of the NEI RQL-42. 37 patients completed the Lithuanian version of the NEI RQL-42 for the second time within 1-2 weeks. For assessment of concurrent validity 16 participants completed the Lithuanian version of the 36-Item Short Form Health Survey (SF-36). Test-retest and internal consistency reliability as well as concurrent validity were calculated. Statistical analysis was performed using SPSS® version 20 for Windows. The level of statistical significance of 0.05 was used for testing statistical hypothesis.

Results: The Lithuanian version of the NEI RQL-42 and its subscales showed good internal consistency (Cronbach's $\alpha = 0.757-0.971$) with the exception of two subscales: activity limitations ($\alpha = 0.538$) and worry ($\alpha = 0.653$). Test-retest reliability was assessed by the intraclass correlation coefficient (ICC) and was high (ICC = 0.810-0.948) except for the subscale activity limitations (ICC = 0.599) and worry

(ICC = 0.622). Almost all subscales showed significant intercorrelations. Very low to moderate correlations were found between the subscales of the NEI RQL-42 and the SF-36 survey.

Conclusion: The results suggest that the Lithuanian version of the NEI RQL-42 is a reliable and valid measure of vision-related quality of life in patients with refractive error.

EP-REF-530

Three years evaluation of angle supported IOL (cachet) on endothelial cell count and it's efficacy

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Purpose: To evaluate the safety of angle supported phakic intraocular lens (Cachet - Alcon) on endothelial cell count and effectiveness in moderate to high myopic patients.

Method: This study was included patients who are myopic range from (-6.00 to - 18.5 D) who had implanted angle supported phakic intraocular lens (Cachet IOL). The outcome measurement included. Corrected distance visual acuity, endothelial cell density and intra ocular pressure pre and post operative.

Results: Data from 36 eyes of 21 patients 11male and 10 female with mean age of 27 (20-37) years assessed for up to 3 years postoperatively are presented. The mean percentage change in central endothelial cell density from the preoperative visit to the 6-month postoperative visit was a loss of 8.0%(acute loss) and the annualized percentage loss from6 months to 3 years was 0.92%(chronic loss). The corrected distance visual acuity was 20/40 or better (0.40 LogMAR) in 32eyes (88.8%) and 20/20 or better (0.00 LogMAR) in 15eyes (41.6%) .No statically significant difference in intraocular pressure with mean of 16.1 mmHg. (P-value 0.54). No pupil ovalization, pupillary block, or retinal detachment was observed.

Conclusion: The angle supported phakic intraocular lens (Cachet IOL) is safe, predictable, and favorable outcome in treating moderate to high myopia patients.

EP-REF-531

Patient selection & neuro-adaptation keys to success in presbyopic refractive surgery

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Good candidates for Presbyopic refractive surgery have a strong desire to achieve excellent distance, intermediate, and near vision without the need for spectacles, however, they must be warned that there are no guarantees they will have total freedom from spectacles.

Caution needs to be used with patients who:

1. Have a history of excessive complaints regarding their glasses and contact lenses.
2. Drive at night as a profession.
3. Are happy wearing glasses.
4. Have pre-existing unrealistic expectations of visual improvement.
5. Problems with nighttime glare and;
6. Have pre-existing, significant ocular surface disease.

Patients who have a history of excessive complaints regarding their glasses and contact lenses are no good candidates either. A degradation of vision -"it is not what it used to be" before presbyopic age - A psychological issue.

It is necessary to make the patient aware before surgery of the possibility for glare and haloes and this minimizes the shock factor should they, in fact, notice them. It is not a requirement for patient selection, but patient must be told that due to the Astigmatism, if it is present, the visual quality might be somewhat degraded. And ocular surface disease, including subclinical dry eye, can adversely impact the quality of vision after PRS. Keeping cognizant of the possibility of tear-film disruption and subsequent blurring of vision cannot be overly stressed.

Neuro-adaptation takes between 2-6 months and age is not a determining factor. For the presbyopic patient wanting PRS, more chair time is needed.

Patients who undergo a modification in the visual system, whether induced by a new pair of progressive eyeglasses or bifocals, or by having undergone a corneal ablative procedure or lens implantation with the novel optics of multifocal intraocular lenses, will undoubtedly be challenged by these newly created perceptive changes.

EP-REF-532

Unhappy patients post corneal and cataract surgery - the treatment

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Cataract surgery after corneal refractive surgery can be challenging for the ocular surgeon due to the difficulty with accurate intraocular lens (IOL) power determination and unexpected refractive surprises. As clinicians have done more work, a number of error sources have been determined. An increasing number of patients undergo corneal surgical procedures to decrease dependence on glasses or contact lenses. These procedures alter corneal effective power. Excimer laser keratectomy has quickly become the modality of choice for corneal refractive surgery.

The procedures change:

1. Shape of cornea,
2. Refractive index of cornea,
3. Biodynamics of cornea,
4. Making goldman applanation tonometry and other methods of measuring iop uncertain. (underestimation of iop!!) and;
5. Changes in the refractive tear film.

Standard intraocular lens (IOL) formulas and keratometry can lead to "refractive surprises."

1. Underestimation of IOL power
2. Unexpected hyperopia after cataract surgery in patients who have undergone corneal refractive surgery for correction of myopia, regardless of the procedure.
3. These refractive surprises seem to be directly related to the amount of keratectomy performed.

Meaning that greater refractive corrections correlate with greater errors of IOL power.

Laser vision correction includes laser-assisted in situ keratomileusis (LASIK), photorefractive keratectomy (PRK), and laser subepithelial keratomileusis (LASEK). These procedures modify only the anterior corneal curvature but leave the posterior curvature unchanged, thereby altering the normal anterior/posterior curvature ratio.

The results post surgery might lead to visual disturbances, such as 1. glare, halos and/or double vision, 2.poor night-time vision, & 3. the development of severe dry eye syndrome.

The rescue for these unhappy patients are an increase of depth of field and a decrease of the higher order aberrations.

EP-REF-533

4 years of clinical experience with multifocal segmented bi-aspheric lens SBL-3 with 400 eyes on file*Janekova A.¹, Zugar R.¹, Janek M.¹, Pasta J.²**¹Eye Centre Prague, Prague, Czech Republic, ²The Military University Hospital Prague, Prague, Czech Republic*

Purpose: To evaluate efficacy, predictability, safety and subjective outcomes of rotationally asymmetric multifocal segmented bi-aspheric intraocular lens in patients with cataract and clear lens extraction.

Methods: A prospective study based on evaluation of 400 eyes of 204 patients (196 had bilateral implantation and 8 patients had unilateral implantation of SBL-3 IOL). SBL-3 is hydrophilic acrylic presbyopia correcting lens. The availability of the lens is in 0.25 diopter power increments. The IOL power was calculated using SRK/T formula. Patients were evaluated preoperatively and postoperatively for distance, intermediate (70cm) and near visual acuity. A satisfaction questionnaire was administered 3 months after surgery. Patients were asked about photopic phenomenon and evaluated spectacle independence in everyday activities.

Results: Subjectively and objectively patients indicated a high level of satisfaction with their distance, intermediate and near vision. The percentage of patients who achieved uncorrected distance visual acuity of 0,8 or better was 90%, the percentage of patients who achieved 1,0 or better was 75%. In evaluation of intermediate visual acuity 81% of patients achieved uncorrected intermediate visual acuity 0,8 or better and 40% of patients achieved 1,0 or better. The uncorrected near visual acuity was 0,8 or better in 88% of patients and 1,0 or better in 60% of patients.

Subjectively patients report low levels of photopic phenomenon and high levels of spectacle independence in everyday activities for all distances. Photopic phenomenon such as glare was evaluated 1,6 and halos was reported at 1,4. Satisfaction with distance activities was 1,3, satisfaction with intermediate activities was 1,2 and with near activities was 1,4.

Conclusions: Patients receiving SBL-3 in current study attained very good uncorrected visual acuity at all range of distances and spectacle independence.

EP-REF-534

Ultrasound biomicroscopy angle evaluation post implantable collamer lenses (ICL) implantation*Girgis M.**Kasr Alainy Cairo Universtiy, Ophthalmology, Cairo, Egypt*

Purpose: evaluating angle of the eye after Implantation of ICL implantable collamer lenses.

Method: prospective study of 2 groups 40 eyes using UBM.

Results: In group A, 3 eyes (15%) had an increase in the post-operative intraocular pressure 2 eyes (10 %) had no problems in the iris configuration neither a closed angle and was related to immediate post-operative high intraocular pressure due to residual amounts of OVD and was normalized after 1 week with anti-glaucomatous treatment.

And one eye (5 %) had an increase in the intraocular tension with closed angle glaucoma and pupillary block normalized later by 2 months after doing **ND-YAG** Iridectomy.

Conclusion: Our study revealed that phakic IOLs implantation (ICL) in moderate to high myopes had excellent results including; stability of refraction for high myopes, reversibility, high optical quality, potential gain in visual acuity, preservation of corneal architecture, asphericity and accommodation. Moreover, correction is not limited by corneal thickness or topography.

EP-REF-535

Management of intraoperative issues and frequency of their occurrence during femtolaser-assisted LASIK procedures using the WaveLight® FS200 laser*Borisov V.**Ophthalmology Clinic Sokol, Refractive Surgery, Rostov-on-Don, Russian Federation*

Purpose: to report on the personal experience of “how to manage intraoperative complications” and outcomes in complex cases.

Method: In this study there were reviewed all cases of FemtoLASIK which had been performed for one and a half year. All operations were performed by one surgeon from May, 2015 (it's onset date of clinical usage of femtolaser WaveLight® FS200 in our department) till December, 2016; total amount of executive eyes is 596.

According to data of science researches and observations throughout the world from the moment of femtolaser introduction in routine surgical practice so far the most mentioned following complications are OBL, vertical gas breakthrough, anterior chamber gas bubbles as well as suction loss.

Mentioned above complications tend to take place independently of model and generation of femtolaser which used for flap creation.

Results: Results: Incidence and quantity of all complications which occurred during a process of FemtoLASIK procedure, features of management and patient data (visual pre- and outcomes, gender, age, ethnicity) were analyzed upon each sort of complex case, registered and described in this report.

Conclusion: Currently FemtoLASIK is most predictable and precise procedure of laser vision correction despite existence of certain specific intraoperative complications and issues which are clearly linked with femtolaser-assisted flap creation. However, relatively simple management upon complex cases helps to achieve high degree of satisfactory or excellent outcomes in vast majority of intraoperative incidents.

EP-REF-536

The advantages and the inconvenient of the technique relex smile about 500 cases and the different with other techniques of refractive surgery (exhibit with videos) in 13 minutes*Youcef B.**Clinic Ophtalmology Etoile du Sud, Ghardaia, Ghardaia, Algeria*

Purpose: New technique in refractive surgery advantage and inconvenient.

Method: Relex smile with visumax zeiss.

Results: 500 cases operated.

Conclusion: Rapid recovery of visual acuity and less complication, dry eyes and surgical recovery more expensive method for maghreb countries.

EP-REF-537

Visual function after implantation of 2 different IOL: TRI 839 MP (trifocal) and ZXR00 (extended range of vision)

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Purpose: After cataract surgery not only visual acuity (VA) improvement is important but also the effect on visual function (VF). The purpose of the study was the evaluation of the visual function after cataract surgery with bilateral trifocal vs extended range of vision IOL (ERV).

Method: Prospective, nonrandomized study after implantation of 420 IOL: 340 trifocal IOL (group 1) vs 80 ERV IOL (group 2). Distance, intermediate and near VA were evaluated. Distance and near stereoacuity and contrast sensitivity were also performed. Patients' satisfaction was assessed by a self-report questionnaire.

Results: Study that included 420 IOL, majority were female (76,54% group 1 and 80,65% group 2), mean age was 63,1 years (group 1) and 65 (group 2); mean IOL power was +21,3D (group 1) and +22,8 (group 2). Percentage of patients with distance VA > 1,0 was 80,7% (group 1) and 76,47% (group 2); intermediate VA > 1,0 was 86,45% (group 1) and 78,94% (group 2), near VA > J1 was 83,34% (group 1) and 47,4,94% (group 2). The presence of halos was superior in group 1 (37,37% vs 25,64%); Near visual satisfaction was superior in group 1 (92,39% vs 76,93%), distance, intermediate and global visual satisfaction was similar (93,08% vs 94,87%; 92,38% vs 94,87% and 97,23% vs 94,87%, respectively).

Conclusion: In conclusion, better near VA is obtained with trifocal IOL. Patients have good visual function but there are some differences regarding visual symptoms and visual satisfaction.

EP-REF-538

The assessment of stability of clinical results in the treatment of excimer laser correction of high myopia and supermyopia

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Purpose: To assess the effectiveness of the laser correction of myopia in patients with high myopia and supermyopia.

Method: Conducted a retrospective analysis of 115 operations (75 patients: 20 males (50.86%) and 55 females (49.14%) with myopic refraction more than 8 diopters at the age from 18 to 43 years. All operations were performed on excimer laser SCWIND AMARIS 500E (Germany) on the LASIK procedure. Formation of the corneal flap (thickness 110-130 microns) was made using a mechanical microkeratome SCWIND (Carriazo-Pendular, Germany).

Results: When analyzing the structure of the original data the spherical equivalent average (SE) was -9,73±1,41; axial length = 26,33±0,99; central corneal thickness was 551,58±28,62; Kavg = 43,87 ± 1,41.

The efficiency after 1 month after surgery was 98.62%, in 3 months - 98.96%, after 6 months - 95.87%. The safeness coefficient was 1.09; 1.08 and 1.07, respectively. The values of NCVA and BCVA before and after refractive surgery at various terms after laser correction significantly increased and are characterized as stable. For NCVA were: preoperatively 0.04±0.02 (0.02 to 0.06), after 1, 3 and 6 months 0.87±0.20 (0.67 to 1.07); 0.81±0.22 (0.59 to 1.03) and

0.79±0.22 (0.57 to 1.0). For BCVA: preoperatively 0.82±0.19 (0.63 to 1.0), after 1 month 0.87±0.17 (0.7 to 1.04) at 3 and 6 months - 0.88±0.16 (0.72 to 1.0), respectively. The stability of refraction in terms of 6 months after the operation: on the spherical component marked shift towards myopia at 0,75D, regression on the cylindrical component amounted to 0,5D. Reoperations was 6,09% (7 cases).

Conclusion: Clinical results of refractive surgery at the excimer laser system SCWIND AMARIS 500E in the correction in patients with myopic refraction more than 8 diopters characterized by high efficiency.

EP-REF-539

Different refractive bioptics

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Purpose: To evaluation result of combining procedures such as:

- 1) phakic posterior chamber lens implantation and excimer lasik surgery;
- 2) intrastromal corneal ring segment (ICRS) and phakic posterior chamber lens implantation;
- 3) PRK (penetrating keratoplasty) and toric intraocular lens implantation.
- 4) ICRS (Intrastromal corneal ring segment) and scleral contact lenses.

Method: Preoperative and postoperative evaluation included: corneal topography, visometry, refractometry, pachymetry, ophthalmometry. The different bioptic procedure was carried out on 36 eyes of 22 patients. Follow up period included 5-6 month.

Results: Preoperative average values of the manifest refraction were -17.25sph with -1.50 cyl, which changed to -3.75sph with -1.4 cyl after implantation ICL in the posterior chamber. Following the lasik procedure the uncorrecting visual acuity improved to 0.68 and fully corrected to 0.79 The final refraction measured +0.16 sph with -0.48 cyl.

Conclusion: In myopia and hyperopia, bioptics with phakic intraocular lenses or refractive lens exchange and subsequent excimer laser yields improved predictability and unchanged safety, compared with sole intraocular lens surgery. Complications are related mainly to intraocular lenses. In keratoconus, intra-corneal rings have been successfully combined with phacoemulsification or with phakic intraocular lenses in a limited number of eyes. Bioptics improves vision and halos and adds no particular risks to phakic or pseudophakic intraocular lens implantation in either myopia or hyperopia. Reverse bioptics, with phakic intraocular lenses or refractive lens exchange, can be used to correct regressed corneal surgery.

EP-REF-540

To report suction loss (total & partial) during small incision lenticule extraction (SMILE) surgery and management according to the stage of suction loss - a case series of first 200 eyes

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Purpose: To report the incidence of suction loss during first 200 eyes in my hand & to document a protocol to manage the same depending on what stage of femtolasar application did the suction loss occur.

Method: In my case series of first 100 patients (200 eyes), SMILE surgery was carried out on VISUMAX at a tertiary eye care centre, New Delhi, India. All patients underwent thorough LASIK workup. Mean preoperative spherical equivalent was -6.3 +/- 1.55 D. Retrospective analysis was done for number of suction loss cases & the further management done for same was documented.

Results: Suction loss was reported in 3 out of 200 eyes (1.5 %). First case had suction loss during the femtolasar pass below the lenticule. In this case, SMILE was abandoned & surgery was converted to FLAP LASIK. The second case had suction loss during femtolasar pass above lenticule. Redocking was done & SMILE surgery was completed with ease. In the third case, there was an ATYPICAL PARTIAL SUCTION LOSS. I went forward with SMILE & was able to complete it successfully but after difficult dissection and a small cap perforation. Post-operatively, all the 3 patients recovered well. Two had 6/6 UCVA & one had 6/7.5 UCVA post 6 months. The incidence was comparable to other major study groups. Cordelia Chan et al, Singapore reported suction loss in 9 out of their 166 consecutive eyes of SMILE performed (5.42%). Anders Ramlov Evarson, Denmark reported suction loss in 14 out of 1800 eyes (0.8 %)

Conclusion: The proposed management protocol for suction loss - If it occurs after the completion of laser pass below the lenticule & ring cut, we can immediately redock followed by repeat femtosecond pass above the lenticule. If it occurs before the completion of first two passes as above, best option is to convert to Femtolasik or do PRK. Good visual outcomes are possible in SMILE cases complicated by suction loss, with results comparable to non-complicated cases & the surgery need not be abandoned.

EP-REF-541

Q-value guided LASIK for high myopia: long-term evaluation of higher-order aberrations

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Purpose: To evaluate long-term outcomes (visual acuity and induced higher-order aberrations) of Q-value guided laser in situ keratomileusis (LASIK) for the treatment of high myopic eyes.

Method: In this retrospective study we reviewed all patients with high myopia submitted to LASIK using Zyoptix® aspheric algorithm between 2008 and 2012. This algorithm incorporates the asphericity of the cornea (Qvalue), the corneal curvature (Kvalue) and the manifest refractive error to create an ablation pattern. LASIK was performed with Technolas 217z100® system (Bausch & Lomb). Total higher-order aberrations (HOA) as well as efficacy and safety were evaluated 3 months and at least 48 months after surgery.

Results: Eighty-one eyes of 46 patients aged 31.5±6.55 years were included. Median spherical equivalent(SE) was 5.25D (range: 4.00 to 7.50). Two evaluations were carried out: 3 months and 84.0±16.5 months. One and 4 eyes had a SE over 1.00D of emmetropia at 3month and final evaluation respectively. Percentage of eyes within 0.50D of emmetropia was 82.7% and 77.8% at first and last visit. Baseline median spherical aberration (SA) was 0.14 and vertical coma (VC) was 0.12. HOA root mean square showed a significant progressive increase(p< 0,001). A statistically relevant increased was noticed for SA between 3month and final assessment(p=0,001)

Conclusion: Q-value guided LASIK for high myopia induced new HOA and was proven to increase primary spherical aberration at a long-term. However, the aspheric algorithm was effective in reducing induced vertical coma, and therefore, could be useful to enhance refractive outcomes.

EP-REF-542

Bilateral ectopia lentis - a report of 2 cases of Marfan's syndrome

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Purpose: Ectopia lentis is a rare condition characterized by a displacement or malposition of the crystalline lens which can cause severe visual impairment. Marfan's syndrome (MFS) is one of the possible causes for ectopia lentis and can be one of the first manifestations of this syndrome. The authors report two different cases of MFS with bilateral superotemporal lens subluxation and their respective management approaches and course.

Method: Patient case control.

Results: A 24-year-old male with a previous diagnosis of MFS came to the Ophthalmology Department with complaints of decreased visual acuity in the left eye (OS), especially when trying to read. Ophthalmologic examination revealed a best corrected visual acuity (BCVA) of 10/10 in the right eye (OD) and 4/10 in is OS with a subjective refraction of -5.00sph -5.00 at 20° cyl. Anterior segment examination revealed a bilateral superotemporal lens subluxation with stretched zonulae with no other ophthalmologic alterations. The second case involved a 56-year-old female with a previous diagnosis of MFS reporting a bilateral decreased visual acuity. BCVA was 3/10 in the OD and 6/10 in the OS (-1.25 at 6° cyl). Slit-lamp biomicroscopy examination revealed a bilateral cataract and a superotemporal lens subluxation.

Both patients were proposed for surgical management of the ectopia lentis in the affected eye due to the significant visual complaints. Anterior segment optical coherence tomography, ocular tomography, laser biometry and anterior segment photography were performed. Both surgeries were video recorded.

Conclusion: Among the ocular manifestations of MFS, ectopia lentis is the most common and is considered a major criterion for diagnosis. However, management of this condition is challenging due to difficult surgical technique and each case should be evaluated and managed individually.

EP-REF-543

Our first experience in refractive surgery with Technolas 317 B&L

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Purpose: To evaluate safety and efficacy of LASIK procedure with Technolas 317 B&L.

Method: Prospective study on 59 patients (97 eyes) who underwent LASIK procedure between -10 and +5.00 diopters. Patients were divided into groups-younger than 40 years (30.5+/-5) and older than 40 years (46,8 +/-4). All ablations were performed on Technolas 317 Bausch and Lomb excimer laser. All flaps were cut with Moria SBK mechanical microkeratome. Preoperative and postoperative uncorrected and corrected distant visual acuity (UDVA, CDVA), and aberometry for 5mm value were measured. Two tailed Student t-test was used for statistical analysis. Follow up was 6 months.

Results: In the first group 42 (66 eyes) were enrolled. Mean preop sphere was 4.72+/- 0.69D (range: +4.00 to +6.25D), postop sphere was 0.44 +/-0.82D (-0.75 TO +2.00D). Mean preop cylinder was 0.90 +/-0.56 D(+0.25 TO +2.25D), postop cylinder was -0.40 +/-0,85 D (-2,5 to +0.75D)

In the second group 17 patients (31 eyes) were enrolled. Mean preop sphere was 4.56+/-0.46D (+4.00 to +5.25D).

Conclusion: Technolas 317 B&L showed good results of visual acuity.

EP-REF-544

Keratoconus treatment using Ferrara intracorneal ring segments - results of the 210° segment implantation at the 5.00 mm optic zone

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Purpose: To determine the safety and efficiency of Ferrara intracorneal ring segments of 210 degrees of arc implants at the 5.00 mm optic zone for treating central keratoconus type "Nipple".

Method: In this study we included eyes diagnosed with keratoconus type "Nipple" (thinner point less than 0.8 mm from the center of the cornea, mean curvature greater than 49.00 D and corneal asphericity greater than -1.00) undergoing surgery of Ferrara-type intracorneal segment of 210 degrees in optic zone of 5.00 mm, with a minimum follow-up of 6 months. Pre and postoperative parameters were evaluated including: visual acuity without (UCVA) and with correction (BCVA), sphere, refractive cylinder, K1, K2, maximum K, asphericity, vertical and horizontal coma. All topographic data were collected from the Pentacam HR® surveyor (Oculus). The surgeries were performed using a manual technique: incision in the most curved meridian and depth was calculated at 80% of the minimum thickness in the segment position. Pachymetry was analysed through the pachymetric map of the topography and by intra-operative ultrasonic pachymetry.

Results: 42 eyes of 42 patients were included, 35 years was the mean age of the studied sample. Preoperative UCVA was 0.15 ± 0.05 , the preoperative BCVA was 0.44 ± 0.21 . Postoperative UCVA was 0.34 ± 0.24 and BCVA was 0.54 ± 0.22 . There was a gain in visual acuity lines in more than half of the patients. All keratometric parameters showed significant reductions after surgery (K1, K2 and Kmax), as well as corneal asphericity: mean preoperative $-1.52 \mu\text{m}$ and mean postoperative $-1.11 \mu\text{m}$. The vector analysis of refractive and keratometric astigmatism did not show a statistically significant improvement in the postoperative period.

Conclusion: The implant of intracorneal segment of 210 degrees in 5.00 mm optic zone proved to be safe and effective in the refractive and topographic correction of central keratoconus Nipple type.

EP-REF-545

Accommodative response to sinusoidal monochromatic stimulus

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Purpose: To study the accommodative response (AR) of healthy subjects under monochromatic stimulus following a sinusoidal change in vergence.

Methods: 60 healthy subjects, aged 20-40, were included in this study. The monocular AR was calculated from the Zernike defocus measured with a Hartmann-Shack wavefront sensor at a rate of 20 Hz. A Badal optical system was used to compensate for the spherical refractive error of the subjects. A Maltese cross target was presented on a microdisplay and viewed through a green interference filter (550 nm, 10 nm bandwidth). The luminance of the microdisplay was about 30 cd/m^2 , and the target spanned 1.95 degrees of visual angle. Vergence of the target was continuously varied to provide sinusoidal changes in defocus between -1 D and -3 D at 0.2 Hz.

Results: A sequence of 3 trials, lasting 25 s each one with 10 s of time span between them, was obtained in order to characterize the ability of the subjects to follow the sinusoidal target. The dynamic AR was characterized by the amplitude and temporal phase lag of the measurements. Both parameters were

obtained by fitting a sinusoidal function with the same temporal frequency as the accommodative demand to the recorded AR over time. Accommodation gain, defined as the ratio between the amplitudes of the AR and the accommodative demand, and temporal phase lag, defined as the difference in time between the response and the demand, were calculated for each trial. Mean values were obtained for each subject and compared between them to determine whether there were differences in their AR.

Conclusions: AR depends on the individuals. Some subjects manifested their difficulty to follow the target with the required level of accommodation. For these subjects, gain AR levels were lower than 0.2. As it is known, chromatic aberration may be a cue for accommodation, so eliminating this cue affects the quality of the AR, and even prevents a proper response for some individuals.

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EP-REF-546

Schematic human eye models to mimic the behaviour of the accommodating eye

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Purpose: A variety of schematic model eyes have been proposed to mimic the behavior of the human eye, some of them even having the ability to simulate morphological changes due to the accommodation. This work summarizes the main characteristics of some of the accommodating models that have been proposed in previous reports.

Methods: Schematic models able to imitate the nature of the human eye are commonly used in basic research and engineering applications. A review of the existing literature was conducted to explore the main human eye models that include the accommodation ability. The reference lists of all eligible reports were also screened to ensure that any relevant work was not omitted.

Results: Accommodative human eye models included in this work can be divided in two groups: those that are defined for some fixed accommodative demands, including also the relaxed condition, and those that are designed to provide a continuous variation of the different parameters that define the model eye as a function of the accommodative demand. Within the first group, Gullstrand No. 1 model eye was constructed at 10.9 diopters (D) of accommodative demand. Gullstrand-Emsley schematic eye was defined with an accommodative form of 8.6 D. Le Grand model eye was proposed based on an accommodative demand of 7.1 D. In the group of model eyes that are able to implement a continuous variation of the different parameters as a function of the accommodative demand, the Navarro model eye was designed to provide changes in the position, radii of curvatures, and conic constants of the optical surfaces, and also in the anterior chamber depth and vitreous depth as functions of the accommodation level.

Conclusions: Accommodating human eye models could be beneficial, as they are able to simulate the real performance of a human eye, and can be used for a range of research purposes including lens design, simulation, and as predictors of the outcomes under different optical or surgical procedures.

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ELECTRONIC POSTER PRESENTATIONS
RETINA

EP-RET-550

Central thickness of inner/outer segment junctions and external limiting membrane layers analysis in healthy patients and in type 2 diabetes mellitus without diabetic retinopathy*Schell C.¹, Rodriguez B.¹, Delas B.¹, Julio G.², Asaad M.³*¹*Consorti Sanitari de Terrassa, Retina, Barcelona, Spain,*²*Universidad Politécnic de Cataluña, Optica y Optometria,*³*Consorti Sanitari de Terrassa, Glaucoma, Barcelona, Spain*

Purpose: Measure and compare foveal domes in healthy patients and in type 2 diabetes mellitus (DM) patients without diabetic retinopathy (DR) with the same age and gender distribution ($p > 0.05$; Mann-Whitney and Chi2, respectively), using optical coherence tomography (OCT).

Method: This observational study included 156 consecutive patients (156 eyes), of which 88 were healthy patients while 68 had type 2 DM without DR. OCT images were taken using a Cirrus HD-OCT 4000 (Carl Zeiss Meditec Inc., Dublin, CA; version 5.0.0). IS/OS thickness was defined as the distance between the IS/OS hyperreflective line and the inner border of the retinal pigment epithelium (RPE). ELM thickness represented the distance between this line and the inner border of RPE.

In addition, we evaluated outer foveal layers and classified them as continuous (cat_2), discontinuous (cat_1), and no visible (cat_0).

Results: Mean IS/OS thickness was 33,25 μm (range: 24-44 μm) and with a standard deviation (SD) of 4,961 μm for type 2 DM patients without DR. While for healthy patients, the mean IS/OS thickness was 43,94 μm (range: 16-53 μm) and the SD was 5,834 μm . On the other hand, mean ELM thickness was 57,18 μm (range: 45-68 μm) and its SD was 5,403 μm for type 2 DM patients without DR. While for healthy patients the mean ELM thickness was 72,08 μm (range: 0-89 μm) and the SD was 12,887 μm .

In diabetics, both central dome-like appearance of cone inner/outer segment junctions (IS/OS) and external limiting membrane (ELM) showed a significant tendency to be shorter compared to the control group. ($p = 0.0001$; Mann-Whitney Test).

All the images showed continuous ELM and IS/OS layers (cat_2), except for one case of type 2 DM.

Conclusion: Type 2 DM patients without clinical signs of DR could tend to lose foveal bulges. This early alteration in central cone membranous discs might be related to the pathogenesis of DM.

EP-RET-551

Effect of topical combination therapy of steroids and non-steroidal anti-inflammatory drugs versus steroids only in treatment of pseudophakic cystoid macular edema*Sobeih D.¹, Abdelghany A.², Ghobashy W.², Shahin M.²*¹*Ministry of Health, Mansoura, Egypt,* ²*Suez Canal University, Department of Ophthalmology, Ismaelia, Egypt*

Purpose: To compare functional and anatomical outcomes of pseudophakic cystoid macular edema (CME) treated with the combination treatment of steroids and non-steroidal anti-inflammatory drugs versus steroids only.

Methods: Randomized control study consists of 40 patients (20 patients in each group) who developed pseudophakic CME after uneventful cataract surgery. Basic demographics, clinical data, visual acuity, intraocular pressures, central retinal thickness, and treatment regimen were recorded and analyzed.

Results: 40 eyes of 40 patients were included in the study with a mean age of 65 ± 9 years. Of these, 20 patients were assigned to take the combination therapy of steroids and NSAIDs eye drops and another 20 patients were assigned to take the steroids eye drops only.

There was a statistically significant improvement in visual acuity in patients treated with topical combination of steroids and NSAIDs therapy compared with non-statistically significant improvement with topical steroids therapy alone at 4-6 weeks. A statistically significant improvement was achieved in both groups at 8-10 weeks. However, statistically significant increases in intraocular pressure was detected in both groups at 8-10 weeks.

As for central retinal thickness (CRT), statistically significant improvements in CRT were seen earlier in those who received the combined therapy (4-6 weeks) than in those who received steroid therapy (8-10 weeks).

Conclusion: Combination therapy has a trend for a synergistic effect. Patients were more likely to experience earlier recovery in visual acuity and CRT. Moreover, it was clear that shorter course of treatment has less frequent IOP spikes.

EP-RET-552

Role of treatment frequency in RPE atrophy progression in patients with exudative age-related macular degeneration*Gertners O.^{1,2}, Birkmane A.¹, Radecka L.^{1,2}, Laganovska G.^{1,2}*¹*Riga Stradins University, Riga, Latvia,* ²*Pauls Stradins Clinical University Hospital, Riga, Latvia*

Purpose: To evaluate retinal pigment epithelium (RPE) atrophy depending on patient age, received intravitreal injection (1.25mg/0.05ml bevacizumab) count 24 months after treatment initiation of exudative age-related macular degeneration.

Method: Data of patient age, baseline, 12-month and 24-month examination of optical coherence tomography (OCT), fundus autofluorescence (FAF) and received injection count of patients with exudative age-related macular degeneration (exudative AMD) were analyzed retrospectively. Exclusion criteria were patients with a follow-up less than 24 months, large intraretinal hemorrhage or significant media opacification. Standard intravitreal 1.25mg/0.05ml bevacizumab was administered monthly during the first three months and continued as needed.

Results: 26 eyes of 24 patients were included in this study. Mean age was 82.3 (SD-6.7). Mean injection count in 24 month treatment period was 9.3 (SD-4.8). Mean baseline RPE atrophic area was 0.64 mm^2 (SD-0.53). Mean RPE atrophic area after treatment enlarged to 1.02 mm^2 (SD-0.66) at 12 months (mean enlargement of 0.51 mm^2) and to 1.43 mm^2 (SD-0.81) at 24 months (mean enlargement of 0.65 mm^2) after treatment. Baseline RPE atrophy area correlated moderately with patient age ($r = 0.457$; $p = 0.0145$). Injection count correlated moderately with RPE atrophy enlargement 24 months after treatment ($r = 0.486$; $p = 0.0112$). RPE atrophy progression 24 months after treatment initiation correlated poorly with patient age ($r = 0.102$; $p = 0.605$). Patient age correlated poorly with total injection count ($r = 0.253$; $p = 0.194$).

Conclusion: Patients with exudative AMD develop some degree of RPE atrophy prior to treatment which moderately correlates with patient age. Progression of RPE atrophy is notable during treatment for exudative AMD and it correlates with injection count during 24 month follow-up. RPE atrophy progression and received injection count poorly correlates with patient age during 24 month follow-up.

EP-RET-553

Repeatability and reproducibility of retinal and choroidal thickness measurements in diabetic macular edema using swept-source optical coherence tomography

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Purpose: To examine the repeatability and reproducibility of retinal and choroidal thickness measured with Swept source Optical Coherence Tomography (SS-OCT) in eyes with Diabetic Macular Edema (DME).

Method: 42 eyes of 25 patients with macular edema secondary to diabetes mellitus were imaged using SS-OCT standard Macular scanning protocols. Retinal and choroidal thickness were measured in the Early Treatment Diabetic Retinopathy Study (ETDRS) grid Total macular circle (TMC) and foveal central subfield (FCS) using device-integrated specific software. The coefficient of repeatability (CR) and intraclass correlation coefficient (ICC) were determined as a measure of repeatability and relative reliability within graders. Reproducibility was assessed using Bland-Altman plots and 95% limits of agreement (LoA) as a measure of interobserver variability.

Results: Intragrader CR of retinal and choroidal thickness were 8.37 and 12.20 microns for TMC and 22.24 and 32.40 microns for FCS respectively, and intergrader 95% LoA were 7.37 - 8.69 and -27.2 - 27.71 microns for TMC and -34.21 - 41.93 and -30.46 - 24.84 for FCS, respectively. Retinal and choroidal thickness showed very good intraobserver reliability for both TMC (ICC 0.99, LoA 0.99-0.99, and ICC 0.99, LoA 0.99-0.99) and FCS (ICC 0.99, LoA 0.99-0.99, and ICC 0.99, LoA 0.98-0.99). Interobserver variability for retinal and choroidal thickness measurements was not significantly different for TMC ($p=0.30$, $p=0.17$) or FCS ($p=0.07$, $p=0.20$).

Conclusion: Retinal and choroidal thickness in DME eyes can be quantified with good reliability, repeatability and reproducibility using new OCT devices that incorporate swept source technology. The longer wavelength of the laser source allows greater penetration of the laser beam in the retinal tissue and better visualization of deeper structures, which may provide new insights in the understanding of the choroidal changes related with DME.

EP-RET-554

Role of ophthalmologist as a Gatekeeper (Referral Outcome Grader :ROG) in Diabetic Retinal Screening Program

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Purpose: Role of ophthalmologist as a Referral Outcome Grader (ROG) in Diabetic Retinal Screening is evaluated over a 5 year period from 1st January 2012 to 31st December 2016 with a total no of 9925 ROG grading's out of total 116198 episodes of Primary grading, 53447 Secondary grading and 10120 Arbitration grading's.

Method: Strict National criteria are followed for Primary, Secondary, Arbitration and referral to ROG grader. Out of 9255, ROG grading's, 5701(61.7%) grading was done by the Ophthalmologist and 3561(38.4%) was done senior experienter Graders. Results were analysed by the outcome as per final grade.

10% of ROG grading done by the senior graders was also reviewed by the ophthalmologist in order to maintain high standard of internal quality assur-

ance of the grading's. All the graders get quarterly supervision by the ophthalmologist.

Results: Outcome of the grading done by senior graders was compared with the outcome of grading done by the ophthalmologist. Routine & urgent referrals to hospital service, unclassified images and referral back to annual digital screening were compared. There was not much difference between the two groups.

Involvement of ophthalmologist in the programme resulted around 50% reduction in the referral of the diabetic patients to the medical retina clinic in the Hospital eye service.

Conclusion: The role of ROG is crucial in any community diabetic screening programme to ensure that the patient is in the right pathway. Ophthalmologist can be entrusted the role of ROG for the quality assurance & avoiding unnecessary referrals. Ophthalmologist can also be entrusted the role of supervision of all the grading process including primary, secondary and arbitration grading's to ensure internal quality assurance in the community Diabetic Eye Screening program. Ophthalmologist can also be entrusted the role of training senior grader to the level of ROG grading where senior graders can take up the role of Gate keeping.

EP-RET-555

Visual function improvement in an animal model of Retinitis Pigmentosa treated with melatonin and epigallocatechin gallate

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Purpose: To evaluated the synergistic effects of melatonin and EGCG in an animal model of RP, the P23H rat. Melatonin and epigallocatechin gallate (EGCG) have been reported to exhibit anti-apoptosis, antioxidant and neuro-protective effects.

Method: 20 heterozygotes P23H line 1 rats, offspring of P23H Sprague-Dawley(SD)-background crossed with Long Evans (LE) rats, were used and compared to 20 SD crossed with LE rats, the reference group. Animals were treated in accordance to the ARVO statement for the use of animals in ophthalmic and vision research. Vehicle, or 10 mg/kg/day of Melatonin and/or EGCG were administered in the drinking water from 30 to 180 postnatal days. Visual function was evaluated by a monthly optomotor test that measures visual acuity and contrast sensitivity.

Results: P23HxLE rats showed lower values than SDxLE rats in all optomotor parameters studied. SDxLE rats treated with melatonin or EGCG increased, after 60 days of treatment (90 days old), visual function parameters even higher than young animals. P23HxLE rats treated with melatonin or EGCG showed better visual acuity and contrast sensitivity than those treated with vehicle in all measurements done after 30 days of treatment, slowing the disease progression. In all animal groups, treatment with melatonin and EGCG simultaneously obtained better visual acuity and contrast sensitivity values than treatment with any of those compounds alone.

Conclusion: Oral treatment of melatonin or EGCG improved vision in wild type animals and delayed vision loss in P23H rats. Furthermore, combination of melatonin and EGCG had a better effect than any of those treatments alone. This suggests both compounds have different mechanisms of action and their effects improving visual function in wild type and in an animal model of Retinitis Pigmentosa are synergistic.

EP-RET-556

Our experience with intravitreal anti vascular endothelial growth factor in treatment of cystoid macular edema after occlusion of the central retinal vein

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Purpose: Cystoid macular edema is a common complication after occlusion of central retinal vein. One possible way of treatment is intravitreal anti-VEGF therapy. Latest registered anti-VEGF drug for intravitreal use in the treatment of cystoid macular edema following central retinal vein thrombosis is Aflibercept. The aim of this paper is to show the mechanism of action anti-VEGF therapy in the treatment of wet CME after occlusion of central retinal vein.

Methods: The analysis of available data from the Department of medical retina. All the patients had a complete eye examination before and after the application of anti VEGF intravitreal.

Results: At the Clinic for Eye Diseases Center Tuzla in the period from September 2014 until December 2016, 26 patients presented due to the decline in visual acuity, after thrombosis central retinal vein (previously treated as outpatients in other health care facilities). Some of them are treated anti VEGF infection (Bevacizumab), without a significant improvement in visual acuity. With direct and indirect ophthalmoscopy, diagnosis of a central retinal vein occlusion, and macular edema in the region as a complication of an underlying disease was made. Diagnosis of the existence of cystoid macular edema is confirmed by optical coherence tomography. After the diagnostic process, intravitreal injections of aflibercept were applied.

Conclusion: Thanks to the extraordinary medical advances, patients were categorized as non responder and newly treated patients with thrombosis of central retinal vein, received enhanced visual acuity after intravitreal application aflibercept at the Department of Ophthalmology Center Tuzla.

EP-RET-557

Combined intravitreal triamcinolone-bevacizumab treatment in refractory diabetic macular edema

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Purpose: To investigate the efficacy and safety of combined intravitreal triamcinolone acetonide (IVTA) and bevacizumab (IVB) injection diffuse diabetic macular edema (DME) refractory to anti-vascular endothelial growth factor.

Methods: Twenty-four eyes of 24 diabetic patients who were diagnosed as refractory DME to anti-VEGF injections were included in this study. Patients underwent combined injection of IVTA (preserver removed, 2 mg, 0.05 ml) and IVB (1.25 mg, 0.05 ml). The best-corrected visual acuity (BCVA), intraocular pressure (IOP) and central macular thickness (CMT) were measured at baseline, one, three, and six months (respectively) after combined IVB-IVTA injection.

Results: The mean CMTs were $453.55 \pm 65.57 \mu$ (mean \pm standard deviation), $381.53 \pm 66.45 \mu$, $332.55 \pm 44.53 \mu$, and $359.97 \pm 55.59 \mu$ respectively. The mean BCVAs were 1.78 ± 0.70 Log MAR, 0.72 ± 0.71 Log Mar, 0.74 ± 0.72 Log MAR, and 1.01 ± 0.77 Log Mar respectively. The values of both BCVA and CMT at one, two, and three months were significantly improved from baseline ($p < 0.05$). After 6 months following combined injection 20 (83.3%) patients needed IV injection. Following the injection there was not any intra ocular

reaction or inflammation. There were 8 (33.3%) patients with high IOP and their IOP's became normal with topical anti glaucomatous treatment.

Conclusions: Combined IVTA-IVB injection is safe and effective procedure diffuse DME refractory to anti-VEGF therapy.

EP-RET-558

Malignant glaucoma post vitrectomy

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Case report: A 50 year old female presented to us with bilateral macular hole with cataract in both her eyes. Patient underwent Phaco PPV with Internal Limiting Membrane Peeling with C3F8 tamponade. On the first post operative day (pod) BCVA was finger counting at 1 m, IOP was 36 mm Hg and on slit lap examination AC was found to be shallow. Considering an IOP rise secondary to gas patient was put on topical anti glaucoma medications and oral acetazolamide with routine steroid eye drops. On subsequent follow ups IOP remained high and AC shallow despite maximum medical management. Hence, a diagnosis of gas overfill was made and patient was posted for ac reformation with gas release. But, the IOP still remained high and AC was shallow. B scan was done to rule out Suprachoroidal haemorrhage. Since there was no Iris bombe formation Pupillary block Glaucoma was excluded. Gonioscopy of other eye revealed open angles. With a diagnosis of MG a Nd:YAG hyaloido-capsulo-iridectomy was made and immediate ac reformation with reduction in IOP. Vision improved to 6/36 and on OCT showed the hole to be closed.

Conclusion: Though vitrectomy is a treatment for malignant glaucoma, Malignant glaucoma is a rare and vision threatening complication of vitrectomy. Treatment options described range from using intracameral tPA to a vitrectomy with removal of inflammatory debris and remanant hyaloid. Early diagnosis and treatment help in favourable outcomes.

EP-RET-559

Evolution of macular hole

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Retrospective case report: 48 year male presented to us with complains of diminution of vision in his left eye. His BCVA was 6/6 in right eye and 6/9 in left eye. Anterior segment examination showed pseudophakia in both eyes. Posterior segment examination showed multiple breaks with lattice degeneration in right eye and a temporal RD with macula on multiple breaks in left eye. Prophylactic laser was done for right eye and left eye underwent vitrectomy with belt buckle and silicone oil tamponade. 12 months post op patient underwent Silicone Oil removal with a BCVA of 6/24 and CFT of 264 microns. 17 months Post op patient presented with a BCVA 6/36 with macular detachment with CFT of 443 microns. Patient was posted for Vitrectomy with Silicone Oil Tamponade. At 47 months post op patient underwent Silicone Oil Removal following with a BCVA of 6/36. At 46 months post op BCVA was 6/60 with OCT suggestive of an ERM with lamellar macular hole with perifoveal cystic spaces and a CFT of 380 microns. At 49 months post op patient presented with BCV of 6/60 with OCT s/o Full Thickness Macular Hole with SRF. Patient underwent ILM peeling with SF6 gas tamponade and at 50 months post op BCVA was 6/60 with CFT 180 with closed macular hole.

Conclusion: Vitrectomy for RD involves complete removal for vitreous with posterior vitreous induction, hence pathogenesis for macular hole seems independent of perifoveal traction. Cystic degeneration accompanied with glial cell proliferation has been postulated with macular hole following vitrectomy.

Sheth et al postulated cystic degenerative changes may be involved and low grade inflammation might be associated with activation of retinal glial cells. Retinal glial tissue contraction could then cause gradual hole enlargement. Though the mechanism of these holes may differ with idiopathic macular hole, they respond well to conventional treatment of ILM peeling as with our case.

EP-RET-560

Combination subthreshold micropulse laser with the pterygopalatine injections of platelet autoplasm in the treatment of central serous chorioretinopathy

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Purpose: To study the effectiveness of subthreshold Micropulse laser exposure (SMILV) to a laser 577 nm with the pterygopalatine injections of platelet autoplasm in the treatment of central serous chorioretinopathy.

Method: Underwent 15 eyes, 9 men, 6 women. The average age 42 years. Before and after treatment complete ophthalmic examination, FAG, micropertometry, OCT- angiography.

The first step: SMILV on the laser system Supra 577 nm («Quantel medical») over the area of macular edema.

Exposure and duty cycle were chosen individually for each patient, depending on the edema height and the pigmentation of the fundus.

Laser parameters: power 125 - 210 mW, exposure 200 msec, 10% DC, spot diameter 100 nm, number of applicates 50 - 175.

The second step: pterygopalatine injection of platelet autoplasm to regional lymph collector 3-4 times at intervals of 72-96 hours.

Results: Results of the study were assessed before SMILV and 1 month after. Criteria for the effectiveness of the treatment: visual acuity before treatment 0,55D average, after treatment 0.75, height of macular edema before an average of 390 nm., after 255 nm.; improvement retina cytoarchitectonics according to OCT: reduction of macular edema height (before was an average 390 nm, after 255 nm.), total fit of the neuroepithelium.

All patients reported subjective improvement in visual function.

Conclusion: Complex use of subthreshold Micropulse laser exposure to a laser with a wavelength of 577 nm with the pterygopalatine injections of platelet autoplasm in the treatment of central serous chorioretinopathy is a safe and effective procedure compared with monolaser treatment.

EP-RET-561

The Tasmanian Macular Hole Study - whole population based incidence of full thickness macular hole

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Purpose: To determine the incidence of full thickness macular hole in the Tasmanian population.

Method: A whole population retrospective case series in Tasmania, Australia. Patients diagnosed with full thickness macular hole (confirmed by optical coherence tomography (OCT) imaging) of both idiopathic and secondary causes were identified from April 2005 to April 2011 by a sole vitreoretinal surgeon servicing Tasmania. Baseline characteristics were recorded. The six-year incidence rate was calculated, based on the 2006 and 2011 Tasmanian census data. Incidence rates were age and sex standardized.

Results: There were 147 eyes of 136 patients. Idiopathic macular holes comprised 128 (87.1%). There were 116 cases of idiopathic Full Thickness Macular Hole in one or both eyes between 1 April 2005 and 31 April 2011. The six-year incidence of idiopathic full-thickness macular holes was 24.3 per 100 000 people, 4.05 per 100 000 per year, with the highest six-year incidence observed among women aged 70-79 years.

Conclusion: This is the first global study to report OCT confirmed incidence rates of full thickness macular holes in a relatively static Australian population sub-group.

EP-RET-562

rs708272 increase the risk of exudative age-related macular degeneration

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Purpose: To determine the frequency of the genotype of *Cholesteryl ester transfer protein* (rs708272) in patients with exudative AMD.

Method: Study included 206 patients with exudative AMD and n=807 healthy controls. The genotyping of CETP (rs708272) was carried out using the RT-PCR.

Results: Statistical analysis revealed that G/A and A/A genotypes of rs708272 polymorphism were associated with 1.5-fold and 1.7-fold increased risks of exudative AMD (p=0.049 and p=0.021, respectively), also both genotypes (G/A+A/A) under the dominant model were associated with the 1.5-fold increased risk of exudative AMD (p=0.021).

Conclusion: We identified that rs708272 polymorphism has a higher risk for exudative AMD development.

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EP-RET-563

Roth spots and retinal hemorrhages revealing a recurrence of chronic myeloid leukemia

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Purpose: Roth spots and retinal hemorrhages are non-specific signs found in several pathologies, including hematological disorders. We herein present a clinical case in which these signs revealed a recurrence of leukemia.

Method: A 36 years-old man, followed for chronic myeloid leukemia for 3 years, in remission under treatment, consulted in the emergencies for a brutal decrease of the visual acuity. In physical examination, the visual acuity was less than 1/10th in both eyes. The slit-lamp examination showed a normal anterior segments and a clear vitreous in both eyes. Dilated examination of the retina revealed multiple retinal and macular hemorrhages and multiple white

centered retinal hemorrhages in both eyes, consistent with the clinical diagnosis of Roth spots. In addition, it showed venous tortuosities consistent with the clinical diagnosis of blood hyper viscosity.

Results: Biological check-up showed a leucocytosis at 523000/mm³, an anemia at 6.7 g/dL and a thrombocytopenia at 100000/mm³. The hematological assessment was compatible with an acutisation of chronic myeloid leukemia. Imatinib therapy was initiated.

After 16 weeks follow-up, ophthalmological examination showed (an improvement) a decrease of the retinal lesions.

Conclusion: Roth spots occur in a wide variety of conditions. Although seemingly diverse and unrelated, they show a common predisposition to retinal capillary bleeding. In this case, the ophthalmological manifestations revealed a recurrence of chronic myeloid leukemia. Therefore, ophthalmological follow-up in these patients may be valuable, and could reveal a progression of the disease.

EP-RET-564

Idiopathic uveal effusion syndrome

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Purpose: We report the case of a 54-year-old man who had an annular choroidal detachment and monocular ocular hypertension after laser iridotomy with previous asymptomatic angular closure.

Method: Conservative treatment with oral corticosteroids and topical antiglaucomatous agents did not improve the illness, which led to vitrectomy and subsequent lensectomy and IOL implantation.

Results: Only the execution of posterior sclerectomies in the four quadrants resulted in the complete reapplication of exudative choroidal and retinal detachments.

Conclusion: It is necessary to detect early Uveal Idiopathic Effusion Syndrome and to perform specific surgical treatment (posterior sclerectomies) to minimize the sequelae in anterior pole (angular closure by synechiae) and posterior pole (pigment in leopard skin)

EP-RET-565

Audit of wet AMD patients treated with IV Ranibizumab over 6-12 months period

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Purpose:

- Neovascular age-related macular degeneration (AMD) is one of the leading causes of legal blindness in the elderly population.
- VEGF is an important factor in the development and growth of choroidal neovascular membranes responsible for the disease.
- monthly injections were recommended first..
- injections every 3 months were insufficient.
- although the approach of PRN dosing regimens was able to reduce the number of treatments and overall cost for treatment in AMD, it was still relatively uncomfortable for patients because monthly follow-up was still needed.
- Treat and Extend dosing regimen seems to represent the most individualized therapy regimen to date.

Method:

- March 2013 and June 2016.
- 27 patients were included.
- minimal follow up of six months.

- Twenty seven patients naïve exudative AMD patients.
- 16 women and 11 men.
- initial examination took place between March 2013 and June 2016.
- The mean age was 78 years (55-94 years).
- mean gain in ETDRS letters at 12 months was 14 (-5 to 41).
- mean number of injections was 9 (ranging from 6-15).

Results:

- 41% of our patients experienced a significant VA gain of 15 ETDRS letters or more.
- 7% had a significant VA loss of 15 ETDRS letters or more.
- 52% obtained VA stabilization.
- 10 of the patients gained vision.
- 10 maintained the same vision.
- No one lost significant amount of vision.
- 1 gained more than 15 letters.
- 3 had their visual acuity stable.

Conclusion:

- 93% obtained VA stabilization or significant VA gain.
- 7% of the eyes experienced significant VA loss.
- In pivotal clinical trials.
- 90-95% of patients have lost fewer than 15 letters.
- more than 40% of patients have shown a significant improvement of 15 letters at 24 months with monthly injections.
- Although our sample of patients is relatively small, and the follow up period for most of the patients was less than 2 years, results of this study is comparable.

EP-RET-566

Subthreshold laser photocoagulation using pattern scan laser for treatment of macular edema

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Purpose: We assessed the efficacy of subthreshold laser photocoagulation (SLP) using general pattern scan laser for treating macular edema (ME) caused by ischemic retinal diseases.

Methods: We studied the effects of SLP therapy on 11 eyes of 11 patients with ME. Eight patients were affected by diabetic retinopathy, while two patients had branch retinal vein occlusion, and one patient had central retinal vein occlusion.

All patients received SLP therapy between December 2015 and July 2016. Before the SLP procedure and at the first, second, and third postoperative months, we evaluated the following: best-corrected visual acuity (BCVA), center macular thickness (CMT) and total macular volume (TMV) as determined by optical coherence tomography (OCT).

Using a scanning laser photocoagulator (MC-500 Vixi™, Nidek), we fixed the laser beam at 100 μm spot diameter, at 577nm wavelength for 20ms, and selected a 2 × 2 grid scan pattern using the Area Centralis® lens. The initial laser power for SLP was 100 mW, and the laser was focused at a specific area of the ME as identified by OCT.

If the spot lesions were visible ophthalmoscopically, the laser power was lowered by 10 mW each down to invisible laser scar.

Results: The laser power was 71.8±19.4 mW and total laser shots were 394.7±281.8, respectively. The logMAR scores and TMV were 0.33±0.38 and 10.11±1.58mm³, respectively preoperatively, 0.30±0.33 and 10.12±1.70 mm³, respectively at the first postoperative month, 0.36±0.39 and 10.00±1.62mm³, respectively at the second month, and 0.35±0.37 and 9.72±1.68mm³, respectively at the third postoperative month.

A significant reduction in TMV was noted at the third postoperative month ($P < 0.01$), and CMT decreased by 20% or more in 7 of 11 eyes (63.6%) at three months after the SLP therapy. No significant change in BCVA was observed over time after the SLP therapy.

Conclusion: These findings suggest that SLP using general pattern scan laser is effective in treating ME.

EP-RET-567

Macular telangiectasia type 2 treated with endpoint management (PASCAL LASER). Presentation of a clinical case

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Purpose: To present the results obtained with the use of PASCAL® laser (End Point Management) in a patient with macular telangiectasia type 2.

Method: Clinical case presentation.

Results: We present the case of a 63 year old male patient with a history of blurred vision in the left eye of 1 year of evolution. The clinical examination shows 20/20 visual acuity in the right eye and 20/25 left eye acuity. Optical coherence tomography demonstrated a subfoveal cysts that was more evident in the left eye, accompanied by findings compatible with macular telangiectasia type 2. It is decided to apply 1 cycle of 3 doses of Avastin®, which achieves a considerable decrease in cyst size, however after 6 months, edema reappears, as well as visual symptoms.

It was decided to perform a macular grid with argon laser, which reduces the edema and foveal cyst considerably, but there was still some intraretinal fluid, so it was decided to perform a macular grid in the left eye using the end point management system (EPM) with the PASCAL® micropulsed laser, achieving a resolution of 95% of the edema.

The patient had a stable visual acuity 8 months after the PASCAL® laser treatment.

Conclusion: The Pascal® micropulsed laser demonstrated in this case, in particular, the control of macular edema in a patient with macular telangiectasias type 2A, which may indicate an alternative to conventional treatments with anti-VEGF, which in the case of Avastin have presented higher cup of relapses.

EP-RET-568

Triangular choroidal syndrome mimicking chronic central serous chorioidopathy

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Introduction: We describe a case of bilateral Amalric triangular choroidal infarction, which mimicked chronic central serous chorioretinopathy (CSCR). A 72-year-old caucasian man with arterial hypertension was referred with bilaterally decreased vision. Best corrected visual acuity was 6/18 in the right eye and 6/60 in the left eye. Fundus examination revealed areas of discoloration with overlying retinal pigment epithelial changes. The left macula showed chronic retinal pigment epithelial alterations associated with long-standing subretinal fluid. Triangular areas of choroidal ischemia were evident with fluorescein angiography. Optical coherence tomography demonstrated multiple small pigment epithelial detachment with serous retinal detachment corresponded with the triangular zones of choroidal infarction identified with fluorescein angiography.

Conclusions: The Amalric triangular syndrome of choroidal infarction may mimic the appearance of CSCR especially in patients with poorly controlled arterial hypertension. Infarction is evident on traditional angiography. Optical coherence tomography may provide a complementary tool to evaluate choroidal ischemia.

EP-RET-569

Combined vitreoretinal surgery for severe ocular injury with NLP

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Purpose: To evaluate the effects of treatment of severe ocular injury with NLP by vitreoretinal surgery, and to analyze the relevant factors.

Method: Twenty-one eyes of 21 patients with severe ocular injuries were involved in this study. All injured eyes with large ruptures with lens dislocation and vitreous loss together with choroidal and retinal detachment, vitreous hemorrhage, suprachoroidal hemorrhage and blood-stained cornea received the combined vitrectomy. The surgical procedures mainly included membrane peeling, retinotomy or retinectomy at the incarceration sites, subretinal surgery, intraoperative use of perfluorocarbon liquids, laser treatment, and silicone oil filling.

Results: Patients with no light perception received vision of better than light perception postoperatively was 30%, and the visual acuity ranged from LP to 0.3 postoperatively. The retina attachment was achieved in 80% of all injured eyes. The mainly postoperative complication was fibrosis exudates in the anterior chamber in all eyes, and retinal redetachment occurred in 4 eyes.

Conclusion: Combined vitrectomy is a safe and effective method in treating severe ocular injury with NLP. However, the visual prognosis is limited because of primary and secondary tissue destruction. In cases of severe ocular injury, ocular salvage, not only vision, may be the most realistic goal. The reasons for NLP before the surgery should be correctly analyzed. A permanent silicone oil tamponade should be carefully considered in patients in whom the operated eye is the only functional eye.

EP-RET-570

Intraocular injection of triamcinolone acetonide for stopping bleeding during vitrectomy for proliferative diabetic retinopathy

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Purpose: To observe the efficacy of intraocular triamcinolone acetonide (TA) injection during vitrectomy for managing severe proliferative diabetic retinopathy bleeding.

Method: We reviewed 25 patients (29 eyes) with severe proliferative diabetic retinopathy who experienced intraoperative bleeding during vitrectomy and ongoing peeling of epiretinal membrane. TA (4 mg, 0.1 ml) was promptly applied over the bleeding retina or proliferative membrane in these bleeding eyes. Data collected included condition of intra- and post-operative intraocular bleeding, postoperative visual acuity, intraocular pressure, and complications.

Results: After TA injection, intraoperative bleeding was effectively controlled with visible triamcinolone precipitates along with blood clots formation on the bleeding retina or proliferative membrane surface. Eight eyes (27.6%) needed

endocautery to prevent remnant but visible leaking vessels. Remnant epiretinal hemorrhage was not cleared in 9 eyes (31.0%) by week 1 and in 4 eyes (13.8%) by month 1 postoperatively. All eyes achieved both intraocular and retinal hemorrhage free condition on month 3 postoperatively. At 6 months after surgery, visual acuity improved in 25 eyes (86.2%). Postoperative intraocular pressure elevation occurred in 8 eyes (27.6%), including 1 eye (3.4%) required one successful trabeculectomy. No recurrent intraocular hemorrhage, proliferative membrane formation, endophthalmitis or other severe complications were observed during follow-up period.

Conclusion: Intraoperative TA injection over the bleeding retina vessels or proliferative membrane effectively controlled bleeding by sedimentation function of TA particle during vitrectomy, and facilitated surgeries with prompt clear visual axis.

EP-RET-572

Evaluation of effect of panretinal photocoagulation on ocular blood flow in patients with diabetic retinopathy by dynamic contour tonometry

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Purpose: To evaluate the effect of panretinal photocoagulation (PRP) treatment on ocular pulse amplitude (OPA) and ocular blood flow in patients having diabetic retinopathy by using dynamic contour tonometry and factors those may affect OPA in patients having diabetic retinopathy by using dynamic contour tonometry.

Method: Fifty eyes of 50 patients having proliferative diabetic retinopathy (PDR) with (PRP), 50 eyes of 50 patients having non-proliferative diabetic retinopathy (NPDR) without PRP, and 50 eyes of 50 age matched healthy controls were enrolled into the study. All patients underwent complete ophthalmic examination including OPA measurements determined by dynamic contour tonometry. The results were compared to each other by statistically.

Results: In patients with PDR, mean OPA was found as $2,6 \pm 1,4$ mmHg. Mean OPA values in NPDR and control groups were $3,3 \pm 1,1$ mmHg and $3,1 \pm 1,0$ mmHg, respectively. There was a significant difference among the groups. In subgroup analyses, OPA was significantly lower in PDR group compared to the NPDR group ($p < 0,01$).

However, comparison between both PDR and NPDR groups the controls gave no statistically significant results. Also, there was a significant positive correlation present between OPA values and systolic blood pressure measurements in all groups.

Conclusion: Protected ocular blood flow has a paramount prognostic importance in retinal vascular diseases including diabetic retinopathy. Although PRP treatment is a very useful treatment modality to prevent further complications in patients with PDR it may reduce ocular blood flow. Systemic hypertension has also a disruptive effect on ocular blood flow.

EP-RET-573

Effect of three monthly injections of intravitreal ranibizumab on retinal and choroidal thickness in subfoveal myopic choroidal neovascularisation

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Purpose: Choroid plays a vital role in the pathophysiology of many retinal conditions. Its role as an indicator in the development of Choroidal neovascularisation (CNV) is under evaluation. We conducted this study to evaluate the change in subfoveal retinal and choroidal thickness following three monthly intravitreal injections of Ranibizumab in eyes with subfoveal Myopic CNV.

Method: In this prospective interventional case series, 15 eyes with pathological myopia and subfoveal CNV, confirmed on OCT and FFA were included. All eyes were given three monthly injections of Intravitreal Ranibizumab 0.3 mg/0.05ml under aseptic conditions. All eyes were followed up monthly for 3 months with respect to best corrected visual acuity (BCVA), intraocular pressure (IOP), central macular thickness (CMT) and subfoveal choroidal thickness (CT) measured on SD-OCT.

Results: The mean age of patients was 46.3 ± 16.5 years. 33% patients were males while 67% were females. Mean spherical equivalent (myopia) was 16.22 DS (Range 10-20 DS). Mean baseline BCVA was 0.166 ± 0.12 that improved to 0.378 ± 0.15 at 1 month ($p = 0.000$) and 0.412 ± 0.17 at 3 months ($p = 0.000$). There was a mean improvement of 2.33 lines on Snellen's acuity chart at 1 month. The mean CMT pre-injection was 319.72 ± 55.41 microns that decreased to 253.89 ± 43.59 microns at 1 month ($p = 0.000$) and 251.34 ± 47.43 microns at 3 months ($p = 0.000$). The mean CT pre-injection was 116.64 ± 44.85 microns that decreased to 107.54 ± 44 microns at 1 month ($p = 0.009$) and 96.79 ± 35.47 microns at 3 months ($p = 0.001$). All 15 eyes showed complete resolution of intraretinal/subretinal edema with scarring of CNV after 3 intravitreal injections of ranibizumab.

Conclusion: Intravitreal Ranibizumab decreases the choroidal thickness along with retinal thickness, in patients with responsive myopic choroidal neovascularisation. The maximum effect is seen at 1 month after the first injection. Choroidal thickness might be an indicator of the activity of CNV and decreases as the CNV heals.

EP-RET-574

Intraoperative optical coherence tomography and vitreoretinal surgery

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Purpose: To provide a survey of the current clinical use of intraoperative optical coherence tomography (iOCT), especially in the context of our own vitreo-retinal experience.

Method: Retrospective evaluation of casuistic cases of typical diseases of the retina, which were treated by standard pars plana vitrectomy (PPV) using iOCT integrated into an operating microscope. Auxiliary techniques: best corrected visual acuity (BCVA) was tested on ETDRS charts, biomicroscopy was performed using a 78D lens, and optical coherence tomography (OCT) using Zeiss Cirrus equipment; iOCT employed an operating microscope OPMI Lumera 700 / Rescan 700 (Zeiss). Operations were carried out under retrobulbar anaesthesia by three-port 23G PPV and using a Constellation surgical unit (ALCON).

Results: Three cases of 2 females (vitreoretinal interface disorders) and 1 male (proliferating diabetic retinopathy) of average age of 63 years are reported. In the former 2 cases, the follow-up period was 3 months, and the

male with diabetic retinopathy was followed for 15 months. All surgical interventions using iOCT took place without either perioperative or postoperative complications. In all cases, full anatomical success was achieved. In the former two cases, there was a marked improvement of BCVA, and in the latter case, long-term stabilization of a very good initial BCVA.

Conclusion: Surgical-microscope integrated OCT is giving the surgeon simultaneous immediate control of both surgical manipulations and OCT visualization. The results are a perfect view and feedback for the surgeon, and improved outcomes for the operated eye.

EP-RET-575

Evaluation of fovea-sparing in epiretinal membrane surgeries

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Purpose: To retrospectively evaluate epiretinal membrane surgery without fovea peeling, in cases with strong adhesion between the epiretinal membrane and fovea.

Method: Nine eyes of 9 patients operated for epiretinal membrane with fovea-sparing peeling (f-sparing group) and 84 eyes of 82 patients operated for epiretinal membrane with complete fovea peeling (f-peeling group) were followed up for at least 3 months and were included in this analysis. The outcome measures were vision and central retinal thickness. All cases have intact inner segment/outer segment (IS/OS) junctions pre-operation.

Results: When patients achieved the best post-operative vision (logMAR), the mean visions in the f-sparing versus f-peeling groups were -0.02 ± 0.08 versus 0.03 ± 0.17 ($P=0.60$), respectively, and showed significant reductions from baseline. After surgery, central retinal thickness was improved significantly by f-peeling group ($359.0 \pm 52.3 \mu\text{m}$). Although a significant difference was not observed between pre and post-operative figures in the f-sparing group, central retinal thickness improved by 6 eyes in 9 eyes (66.7%).

Conclusion: Significant improvement in vision was achieved in the f-sparing group without damage to the fovea. It can be concluded that peeling is not required for cases where adhesion is strong.

EP-RET-576

Cluster endophthalmitis after intravitreal injection of bevacizumab - one year follow-up results

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Purpose: To evaluate one year outcome of 8 patients referred to tertiary centre with acute endophthalmitis following intravitreal injection of bevacizumab in a private facility.

Methods: Retrospective study.

Results: Patients were referred between 4th and 7th day after intravitreal injection. All presented with signs of acute endophthalmitis - conjunctival injection, cells, flare and hypopyon in anterior chamber and dense vitreous opacities obscuring view of fundus. Ultrasonography proved attached retina. Presenting visual acuity varied from hand movements (in 5 patients), to count-

ing fingers (2 patients) and 0,03 (1 patient). On the day of admission local and systemic antibiotic therapy was started and pars plana vitrectomy with vitreous sampling, intravitreal antibiotics (ceftazidim and vancomycin) and instillation of silicone oil was performed.

Cultivation of vitreous samples was negative in one patient, *Stafylococcus epidermidis* was found in 7 patients and in 2 patients there was an additional finding of *Pseudomonas Tolaasii*. In all patients silicone oil was removed within 1 to 6 month, in 3 patients rhegmatogenous retinal detachment necessitated revision and second silicone oil tamponade.

During the follow-up cataract surgery was performed in 3 out of 4 phakic patients and 4 patients received intravitreal aflibercept because of their primary diagnosis (age related macular degeneration).

After one year follow-up visual acuity was 0,1 and worse in 3 patients (0,03, 0,08, 0,1), between 0,12 and 0,2 in 2 patients (0,12 and 0,16) and better in 3 patients (0,4, 0,5 and 0,5). The final visual acuity was better than before injection in 1 patient (primary diagnosis central serous chorioretinopathy), same in 1 patient and worse in remaining 6 patients.

Conclusion: Endophthalmitis after intravitreal injection is an infrequent condition with generally poor prognosis even with maximum effort. This is caused by inflammation itself as well as by ongoing primary disease.

EP-RET-577

The influence of ARMS2/LOC387715 A69S gene polymorphism on the development of age-related macular degeneration

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Purpose: to analyse the connection of ARMS2 gene polymorphism with AMD within the Ukrainian population.

Method: the study included 144 patients diagnosed with AMD and 38 people of the corresponding age and gender without AMD (control). Polymorphic variants of ARMS2/LOC387715 A69S rs10490924 gene were determined during the real-time polymerase chain reaction, which was conducted using such reagents as TaqMan®SNP Genotyping Assay and Life-technologies (USA) in the Real-Time PCR System 7500 (Applied Biosystems, USA).

Results: the distribution of G/G ancestral homozygote, unlike other genotypes, had a statistically significant differentiation within the selected groups. G/G genotype among the patients diagnosed with AMD was observed 1.75 times less than among those in the control group (23.6% vs. 42.1%, respectively; $p_{\text{Fet}} = 0.04$). So the frequency of G/G ancestral genotype decreased significantly in the event of AMD. It corresponded to the greater frequency of G/T heterozygote (1.2 times more often; $p_{\text{Fet}} = 0.11$). Minor T/T homozygote was not detected in the control group at all, while there were 6 patients diagnosed with AMD, among whom it was found (0.04%; $p_{\text{Fet}} = 0.35$). The analysis of the association with a disease ($p = 0.04$) demonstrated that G/G genotype decreased the chances of AMD development (OR = 0,43; 95% BI 0,20-0,90), while G/T and T/T genotypes increased them (OR = 1,89 and OR = 3,61, respectively).

Conclusion: it was demonstrated that ARMS2/LOC387715 A69S rs10490924 gene polymorphism influences AMD development within the Ukrainian population.

EP-RET-579

Prognostic factors for neovascular glaucoma in eyes with treated proliferative diabetic retinopathy*Lee J.H., Kim T.K., Lee M.Y., Lee Y.C.**Uijeongbu St. Mary's Hospital, College of Medicine, The Catholic University of Korea, Uijeongbu, Korea, Department of Ophthalmology and Visual Science, Seoul, Korea, Republic of***Purpose:** To evaluate the factors that are significant for the progression to neovascular glaucoma in patients with proliferative diabetic retinopathy.**Methods:** In this retrospective analysis, we reviewed the medical records of 52 patients who visited our office and were first diagnosed with proliferative diabetic retinopathy from March 2014 to March 2016, we investigated predictors for neovascular glaucoma.**Results:** A total of 52 patients were included in the investigation; of the 52 patients 12 patients (23.08%) were diagnosed with iris neovascularization and 4 patients (7.69%) developed neovascular glaucoma. The patient group with iris neovascularization had been diagnosed with diabetes mellitus on average for 10.88±7.14 years and the patient group with neovascular glaucoma had been diagnosed with diabetes mellitus on average for 11.75±8.61 years.

The patient group with neovascular glaucoma had been diagnosed with diabetes mellitus significantly longer than the control group without iris neovascularization which had been diagnosed with diabetes mellitus on average for 8.30±5.25 years (p-value 0.41, 0.032). For HbA1c, the patient group with iris neovascularization had been diagnosed on average for 9.59±2.23 years and the control group without iris neovascularization had been diagnosed for 9.27±2.54 years.

There was no significant difference between the two groups. (P=0.721). The patient group with neovascular glaucoma had been diagnosed for 11.55±0.21 years and they had been diagnosed significantly longer than the control group (p-value 0.048).

Conclusion: A long diabetes mellitus period and high HbA1c levels have a significant effect on the progression to neovascular glaucoma in patients with proliferative diabetic retinopathy, this information could be useful for predicting and preventing the prognosis of patients.

EP-RET-580

The case that ranibizumab injections were effective for type2 choroidal neovascularization in focal choroidal excavation*Yokoyama K.¹, Kikuchi T.², Ogino D.¹, Takahashi H.¹**¹Showa University, Tokyo, Japan, ²Kikuchi Eye Clinic, Kanagawa, Japan***Purpose:** I report intravitreal ranibizumab experienced an effective case for type2 choroidal neovascularization (CNV) in focal choroidal excavation (FCE).**Method:** Case report.**Results:** Japanese, female, 46, without relevant systemic history, who visited due to diminished vision in right eye. Best corrected visual acuity (BCVA) of 20/20 (-3.00 [-0.75×170°]), in the right eye (RE) and of 20/20 (-3.25 [-0.75×30°]) in the left eye (LE). Intraocular pressure and anterior segment of both eyes was normal.

RE fundus photograph demonstrated a subfoveal exudative lesion with serous retinal detachment and subretinal hemorrhage. RE Spectral-domain optical coherence tomography (SD-OCT) showed FCE with serous retinal detachment and type2 CNV in the macular. LE were seen conforming FCE in the macular. Fluorescein angiography showed classic CNV.

On Indocyanine green angiography revealed focal hypofluorescence at the area of focal choroidal excavation and abnormal vessels representing CNV that extended over the margin of the hypofluorescent area.

LE followed up and RE was treated with intravitreal ranibizumab with initial 3 consecutive injections. After 2 monthly injections, the SD-OCT image revealed resolution of subretinal fluid.

Conclusion: Intravitreal ranibizumab may be effective for type2 CNV in FCE.

EP-RET-581

Experience of aflibercept in wet AMD patients switched from ranibizumab*Singh R., Menon V.J.**Kettering General Hospital, Ophthalmology, Kettering, United Kingdom***Purpose:** Lucentis (Ranibizumab) is used as first line treatment for wet AMD, in our hospital. If the patients do not respond and have had minimum 7 injections of Lucentis they can be shifted to Eylea (Aflibercept). We studied the results of patients shifted to Eylea from Lucentis**Method:** Compare log MAR vision before the start of Aflibercept and after 3rd and 7th injection**Results:** LogMar vision before injections of Eylea: 0.74

LogMar vision after 3 injections of Eylea 0.72

LogMAR vision after the 7th Eylea injection 0.69

Average number of Lucentis injections before shifting to Eylea 15.4

Conclusions: The preliminary results show that Eylea is an effective rescue measure for patients not responding to Lucentis. (n19)

EP-RET-582

Particular ophthalmological aspects of the evolution of posttraumatic retinal lesions caused by light scribe lasers - case report*Tudosescu R.^{1,2}, Istrate S.^{1,3}, Alexandrescu C.^{2,3}, Coman C.^{4,5}, Ciuluvica R.³, Voinea L.M.^{2,3}**¹Regina Maria Private Clinic Bucharest, Ophthalmology, Bucharest, Romania, ²University Emergency Hospital Bucharest, Ophthalmology, Bucharest, Romania, ³University of Medicine and Pharmacy Carol Davila Bucharest, Ophthalmology, Bucharest, Romania, ⁴Medsana Private Clinic Bucharest, Ophthalmology, Bucharest, Romania, ⁵University of Medicine and Pharmacy Carol Davila Bucharest, Pharmacology, Bucharest, Romania***Purpose:** To present the case of a 28 year old patient who presented with retinal injury caused by a light scribe laser.**Method:** The patient presented in our clinic approximately 1 day after the decrease in visual acuity in the right eye. The patient reported looking into the beam of a commercial laser used for writing on CD's the prior day. Ophthalmic examination revealed that the best corrected visual acuity in the right eye was 20/120 and in the left eye 20/20.

Slit lamp examination showed in the right eye a small round posterior subcapsular opacification and normal left eye. Goldmann tonometry was normal in both eyes. Indirect ophthalmoscopy showed on the right eye a small, round, yellow foveal lesion. OCT and angiofluorography confirmed a linear and a round lesion in the choroid in the fovea. The patient received non-steroidal antiinflammatories and ocular hipotensors as general therapy and local non-steroidal anti-inflammatory drugs.

Results: 1 month later, OCT examination showed in the right eye a stage 4 macular hole with a foveal scar and perilesional oedema, with improved visual acuity in the right eye (20/80). At 1 year follow-up, the perilesional oedema had decreased, the visual acuity was stable, and the macular hole was non-progressive.

Conclusion: Lasers used for commercial purposes can cause important traumatic lesions to the lens and more importantly to the retina, in particular to the fovea with different outcomes. The particularity of this case is the gravity of the retinal and choroidal lesion which appeared 1 month after the traumatism. The initial inflammation led to the development of a stage 4 macular hole and a foveal scar with permanent visual dysfunction in a young patient.

EP-RET-583

Brimonidine neuroprotective properties in experimental optic nerve crush model

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Purpose: Brimonidine neuroprotective properties remain controversial. The purpose of this study was to investigate whether brimonidine eye drops protect retinal ganglion cells (RGCs) and astrocytes in a mouse model of experimental optic nerve crush (ONC).

Methods: Six healthy 3-month old male Balb/c mice were used in the study. The ONC was performed on all right eyes (n=6), whereas left eyes served as contralateral controls (n=6). Brimonidine tartrate 0.2% (Luxfen®, n = 3) or NaCl 0.9% (n = 3) drops were administered to all eyes, subjected to ONC. Seven days after the ONC the mice were transcardially perfused, eyes enucleated and whole mount preparations of retinas prepared. Then, the retinas were immunostained and investigated using fluorescent microscopy. Fifteen images were taken from each retina in a systemic order for further evaluation. RGC and Astrocyte number was manually counted (cells/mm²). The results were presented as mean±SD and considered significant when p < 0.05.

Results: The mean number of RGCs was significantly lower in NaCl group (2140.2±197.5/mm²) than in contralateral control group (4386.5±348.5/mm²) (p = 0.039). The mean number of RGCs in brimonidine group (3360±976.6/mm²) did not differ from other groups (p>0.05). The mean number of astrocytes did not differ between contralateral control (248.4±12.5), NaCl (275.2±61.4) and brimonidine (240.6±7.8) groups (p>0.05).

Conclusions: RGC count was better preserved after the ONC, if brimonidine were administered, as compared to NaCl group. Astrocyte reactivity was not observed in Brimonidine and NaCl groups after the optic nerve crush. Further studies are needed for extended brimonidine neuroprotective properties' evaluation.

EP-RET-584

Changes of drusen number and central retinal thickness in age-related macular degeneration patients over years

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Purpose: to quantify increment in drusen number over two years in patients having drusiform ARMD

Method: we analyzed 44 eyes with drusiform dry ARMD using high resolution optical coherence tomography over a 2-year period.

Results: On average, increment by 4 and 5 drusen per eye during the 2-year period was recorded in female and male patients with drusiform dry ARMD, respectively

Conclusion: Although drusen may disappear, regress, enlarge, stay the same or completely new drusen may appear with time, we showed that the overall number of drusen in our age group generally increased.

EP-RET-585

Bilateral serous detachments in HELLP Syndrome: a case report

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Purpose: To evaluate the ophthalmologic signs and symptoms in HELLP syndrome, i.e. hemolysis, elevated liver enzymes and low platelets count.

Method: A retrospective study of one 39-year-old pregnant female who presented diminution of visual acuity in both eyes associated to HELLP syndrome. The ophthalmologic findings were visual acuity of 20/25 in both eyes and serous exudative retina detachment in posterior biomicroscopy.

Results: The decision was not to treat the patient because of her delicate situation; instead, her evolution was monitored with optical coherence tomography, visual fields and colour tests. She had a miscarriage a few days after the appearance of the initial ocular symptoms, and one month later she experienced spontaneous improvement of visual acuity and exudative retina detachment.

Conclusion: Exudative retina detachment is an unusual finding that can affect less than 1% of HELLP syndrome patients. We do not know the pathogenic pathway of exudative retina detachment; a theory is that the coriocalpilaris suffer ischemia caused by disseminated intravascular coagulation. The clinical findings improve when gestation comes to an end.

EP-RET-586

“Cataract flip side” anatomic and topographic features of anterior vitreous cortex

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Purpose: to study anatomic and topographic features of vitreous body (VB) in the area of lens and pars plana of ciliary body by applying contrast enhancement of VB structures.

Method: The technique implying VB contrast enhancement using originally developed "Vitrecontrast" ultra dispense suspension (non-organic barium sulfate in isotonic solution), which is poorly soluble in water was proposed. The study was conducted on 20 cadaver donor eyes. For preparation of an eye we suggested original technique from posterior to anterior pole, that was applied. Contrast enhancement of vitreous body structure using "Vitrecontrast" suspension and consecutive removal of VB anterior cortical layers in the direction from central zone of VB to the surface of posterior capsule of lens were conducted.

Results: Anterior vitreous cortex is a complex structure formed by numerous isolated organized layers. Layer- by layer structure of anterior vitreous cortex is consecutively and anatomically attached to posterior lens capsule, zonules of Zinn, ciliary body and retina. It was shown that upon separation of anterior cortical layers from lens surface vitreous fibers were present on the posterior lens capsule in all cases suggesting the existence of retrolental bursa(bag) attached to the lens rather than retrolental space.

Conclusion: The novel conception concerning ultrastructure of the cortical layers can explain potential pathogenetic mechanisms of vitreous destruction, retinal detachments and macular pathology following phacoemulsification, posterior capsulorhexis and laser posterior capsulotomy.

EP-RET-587

Comparative clinical analysis of the results from Lucentis and Eylea treatment of patients with central retinal vein occlusion (CRVO)

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Purpose: The aim of our study is to compare the effectiveness and long-term treatment results of Lucentis and Eylea in patients with CRVO both edematous and ischemic type.

Methods: We enrolled 46 patients with CRVO, which were divided in two groups: 22 patients with edematous type and 24 with ischemic type of occlusion. Half of the patients of both groups were treated with Lucentis (ranibizumab) and the other half Eylea (afibercept). We made 3 injections of each of the drugs in a period of one month from one another. All patients underwent complete ophthalmological examination, including VA, microperimetry, fundus photography, FA and OCT.

Results: In the first group of CRVO patients with macular edema we had significant improvement of the VA and macular thickness with both anti-VEGF drugs. The Lucentis treated group showed VA improvement from 20/80 to 20/40 and mean reduction of the central subfoveal thickness of -157 mk. The patients treated with Eylea changed their VA from 20/125 at baseline to 20/60 and the mean change of central foveal thickness was 186 mk. In the ischemic CRVO group there was a difference in the effect. The VA improvement was similar from 20/80 to 20/60 for both groups but the improvement of the mean central retinal thickness was 87 mk for Lucentis group and 212 mk for Eylea. That is 26.2 +- 3.4 percent to 47+- 3.4 percent respectively. The reduction of the hemorrhagic activity and new vessel formation was more evident in Eylea treated patients.

Conclusion: Both Lucentis and Eylea are treatment of choice in CRVO in order to avoid the sight threatening complications of edema and neovascularisation. Although in edematous type of the disease the affectivity of both drugs is similar in ischemic types, where the levels of VEGF- A are the highest of all ischemic retinal vascular diseases, Eylea gives better results both for the VA as well as for the reduction of the hemorrhages and macular thickness.

EP-RET-588

A rare clinical case of combined hamartoma of the retina and RPE in young adult

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Purpose: The aim of our study is to report a clinical case of a young adult shown with the picture of combined hamartoma of the RPE and discuss the diagnostic strategies and follow up.

Material and methods: We report a case of a 26 year old adult who complained of progressive loss of vision of one eye in a period of one year. She was accepted in the ward and underwent a complete ophthalmologic examinations including OCT (RTVue OPTOVUE), fluorescein angiography and fundus autofluorescence. The OCT programs included HD line, Cross Line, EMM5. The fundusautofluorescence (FAF) was done with the Cannon X1 camera.

Results: Ophthalmoscopically we found a partly pigmented, slightly elevated, peripapillary lesion with strong distortion of the retinal blood vessels. Fluorescein- angiography showed early filling of the dilated, large caliber, anomalous retinal vessels, which in the periphery make a specific network of vessels with immense glial proliferation and leakage of dye in the mid and late phases of the study. The OCT showed generalized edema in the retina and peripapillary zone with epiretinal membranes on the surface. The autofluorescence pictures showed typical findings for RPE proliferations.

Conclusion: Combined hamartomas of the retina and RPE (CHRPE) are rare occasions, usually congenital. What is interesting in our case is that it occurred in a later age of 26 years. Very similar to the reports of Macular Society Collaborative Study the lesion in our cases is also found juxtapapillary (in 76%) and clinically, it is elevated, with a variably pigmented outer portion and a lighter central core of dilated tortuous vessels and gliosis. The proper diagnosis of such cases is important because this benign lesion may be confused with more threatening conditions such as malignant melanoma or retinoblastoma. An appropriate diagnosis through clinical appearance and fluorescein angiography is imperative to prevent unnecessary enucleation.

EP-RET-589

Intravitreal bevacizumab for the treatment of retinal vein occlusions

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Purpose: To evaluate the treatment success of intravitreal injections of *Bevacizumab (Avastin)* for resolving of macular edema secondary to *retinal vein occlusions (RVOs)*.

Method: Prospective study design included 22 naïve patients with retinal vein occlusions (10 patients with CRVO and 12 patients with BRVO) who were treated with monthly intravitreal injections of Bevacizumab (Avastin) The participants were examined for: best corrected visual acuity (BCVA), tonometry, fundus examination with 78 Dpt Volk lens, Optical Coherence Tomography for central macular thickness measurement at baseline and after treatment.

The intervention was performed with standard treatment protocol for intravitreal injections of Bevacizumab (Avastin) in operating room.

Results: The study was designed to evaluate outcome of the treatment in terms of visual acuity gain (BCVA), central macular thickness (CMT) prior and after the treatment and mean number of applied injections. The statistical analysis have shown improvement of BCVA after the treatment (mean visual acuity gain of 0,13) without statistical significance. Regarding central

macular thickness measurement statistically significant difference was found in the group of CRVO (mean CMT difference of 417,30 μm). The mean injection number was similar in both groups, estimated on average 4,91 injections. There were not registered any serious side effects of the treatment.

Conclusion: The results of performed pilot study confirmed the favorable effect of Bevacizumab (Avastin) as anti-VEGF treatment in patients with retinal vein occlusions. Furthermore, Bevacizumab was applied as primary treatment for resolving macular edema secondary to vein occlusions. The encouraging results should enable optimizing the treatment in terms of minimal individual injections number to achieve best results regarding functional and anatomical outcome.

No conflict of interest to disclose.

EP-RET-590

Changes in flare value following intra-vitreous injection of ranibizumab for diabetic macular edema

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Purpose: It is believed that ocular inflammation is involved in the mechanism of onset of diabetic macular edema (DME). Aqueous flare is among the indices of ocular inflammation. To investigate flare changes in the anterior chamber, visual acuity and macular retinal thickness (CMT) were measured before and after intra-vitreous injection of ranibizumab (IVR) in patients with DME.

Method: This study included 41 eyes of 57 patients with DME who received IVR at Kaiya Eye Clinic between February 2014 and December 2015. Aqueous flare, visual acuity, and CMT were recorded before injection (Pre-IVR) and at 1 day (Post-1), 7 days (Post-7), 14 days (Post-14) after injection.

Results: The mean values of flare at Pre-IVR, Post-1, Post-7, and Post-14 were 13.5 ± 7.0 , 13.9 ± 8.9 , 13.0 ± 6.7 , and 11.1 ± 5.6 photoncounts/ms, respectively. There was a statistically significant decrease in flare between Pre-IVR and Post-14 ($p=0.002$).

There was no statistically significant correlation between flare and CMT at Pre-IVR, Post-1, Post-7, and Post-14. However, flare at Pre-IVR was lower tendency in the visual acuity improvement group than in the non-improvement group ($p = 0.06$).

Conclusion: Flare values in DME were reduced 14 days after IVR. Further treatment such as photocoagulation, is recommended from the 14th day following IVR.

EP-RET-591

LPL rs12678919 role in patients with exudative age-related macular degeneration

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Purpose: To determine association between *LPL rs12678919* and AMD development.

Method: The study enrolled 256 patients with exudative AMD and 829 healthy controls (reference group). The genotyping was carried out using the RT-PCR.

Results: In the analysis of *rs12678919* polymorphism in *LPL* revealed statistically significant variable under the additive model with 1.7-fold decreased risk of exudative AMD (OR=0.600; 95% CI: 0.385-0.936; $P=0.024$).

Conclusion: The study showed that *LPL rs12678919* gene polymorphism may have a protective role in exudative AMD development.

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EP-RET-592

Assessment of MPOD in monozygotic and dizygotic twins

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Purpose: To determine macular pigment optical density (MPOD) within pairs of monozygotic (MZ) twins and dizygotic (DZ) twins.

Method: Thirty MZ twins and fourteen DZ ophthalmologically healthy twins were tested. MZ and DZ twins were matched by age and gender. The optional macular pigment density module for the Visucam 500 used the reflectance of a single 460-nm wavelength based on a single blue-reflection fundus image to determine MPOD and its spatial distribution.

Results: The median of macular pigment optical density were 0.102 for MZ twins vs 0.104 for DZ twins, respectively, $p=0.541$.

Conclusion: Our results revealed that there were statistically significant difference between left and right eyes in monozygotic and dizygotic twins.

EP-RET-593

Non-progressing age related macular degeneration, despite long term hydroxychloroquine therapy

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Purpose: To describe an Age Related Macular Degeneration (AMD) case, in a patient that had been under continuous hydroxychloroquine (HCQ) therapy over 15 years, without developing macular atrophy nor visual acuity loss.

Method: A retrospective case report.

Results: An 84 year old man, diagnosed with Erythematous Systemic Lupus 45 years ago, and being on regular visits due AMD development 25 years ago. The patient had been administered HCQ uncontinuously the last 20 years. He has not shown significant AMD progression, nor development to either atrophic AMD nor neovascular AMD. He has maintained his visual acuity, without metamorphosis complaints nor color perception disturbances. ERG showed minimal diffuse wave amplitude decrease, and a minimal 10-2 visual field sensitivity loss, that remained stable, without further impairment throughout the follow up period. Color testing remained unremarkable.

Conclusion: AMD remains the most common cause of blindness among the elderly. Also, a concomitant maculopathy could further impair retinal damage due to HCQ therapy.

It has been described, that some reumatoid arthritis and other inflammatory diseases patients, under anti-inflammatory treatment for a long period of time, showed sparing of AMD. Probably due to its anti-inflammatory effect.

Also, some specific genetic variances in ABC4 genome sequence have shown a protective effect on patients receiving HCQ, with a concomitant maculopathy, including AMD.

The case that compels us, does not have a genetic test done, but it could be a combination of both, the anti-inflammatory drug effect and the possibility to carry a genomic variance, that could have spared both, AMD progression and further HCQ maculopathy development. Considering that AMD has a strong environmental influence, with a very well-known genetic susceptibility.

Still, further follow up with current technology is needed, to continue to watch over these patients, being this association very infrequent.

EP-RET-594

Scleral window surgery for uveal effusion: a case report

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Purpose: To describe clinical course and surgical treatment of a rare case of idiopathic uveal effusion.

Method: Case report.

Results: A 46 year old male was referred for management of a bilateral retinal detachment and choroidal detachment after recent intravitreal injection. Surgical management was performed. Retinal detachment resolved and choroidal detachment became a retinal detachment.

Conclusion: Surgical treatment was effective. However, sequellae were noted without early diagnosis.

EP-RET-595

Paracentral acute middle maculopathy mistaken for retrobulbar optic neuritis

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Purpose: to describe a rare case of a recently described entity : paracentral acute middle maculopathy

Method: Case report

Results: We describe the case of 35-year-old female patient with history of Acute scotoma of the left eye. Examination: normal afferent pupillary reflex. Ocular coherence tomography -angiographie (OCTA) shows ischemic area in the deep macular retina.

Conclusion: Spectral-domain OCT and OCTA provide clues for the diagnosis of paracentral acute middle maculopathy in patients with acute-onset scotoma.

EP-RET-596

Estimating CYP4F2 genetic polymorphism as a predisposition to age-related macular degeneration

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Purpose: The aim of this study was estimating the CYP4F2 Rs1558139 gene polymorphism predisposition in patients with age-related macular degeneration (AMD).

Methods: The study included 204 patients with early AMD (I patient group), 204 patients with exudative AMD (II patient group) and 294 healthy individuals (control group). The control group was formed by taking into consideration the distribution of patients in the early and late (exudative) AMD groups by gender. There were 68.63% (n=140) of the women and 31.37% (n=64) of men in the early AMD group, 66.18% (n=125) of the women and 33.82% (n=69) of the men in the late AMD group, and 72.45% (n=213) of the women and 27.55% (n=81) of the men in the control group. All the groups were matched by gender ($P > 0.05$).

Results: The A/A genotype of CYP4F2 Rs1558139 was more frequently observed in women with early AMD than men (31.9% vs. 17.3%, $P < 0.001$)

Conclusions: The study showed a significantly greater prevalence of the A/A genotype of CYP4F2 Rs1558139 in women than men.

EP-RET-597

The association between Rs1558139 gene polymorphisms and risk of age-related macular degeneration between age

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Purpose: The aim of this study was evaluating the association between CYP4F2 Rs1558139 gene polymorphism and AMD development between age.

Methods: The study included 204 patients with early AMD, 204 patients with exudative AMD and 294 healthy individuals. The patients' age in the early AMD, late AMD and control groups ranged from 50 to 90 years (median 66), 50 to 93 years (median 69), and from 50 to 90 years (median 68), respectively. All the groups were matched by age ($P > 0.05$).

Results: The A/A genotype was more frequently found in women with late AMD aged ≥ 65 years than in men with early AMD aged < 65 years (31.2% vs. 8%, $P = 0.0228$, respectively).

Conclusions: The A/A genotype was more frequently observed in women with late AMD in older age than in men with early AMD in younger age.

EP-RET-598

Optical coherence tomographic characteristics of central retinal vein occlusion simulating combined occlusion of central retinal artery and central retinal vein

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Purpose: The diagnosis of combined occlusion of central retinal artery and central retinal vein (combined CRAO/CRVO) has been made by the angiographic evidence of absent or delayed retinal arterial filling associated with the ophthalmoscopic features including superficial retinal whitening, intraretinal hemorrhages and dilated and/or tortuous retinal veins. Among eyes with central retinal vein occlusion (CRVO) with macular edema there are some eyes with fundus pictures simulating combined CRAO/CRVO without evident angiographic evidence of arterial occlusion. We have noticed that the optical coherence tomography (OCT) image of these combined-CRAO/CRVO-like eyes shows hyper-reflective inner retinal layers without swelling of inner nuclear layer (INL), while the typical OCT image of eyes with macular edema associated with CRVO shows retinal swelling both in INL and in outer plexiform layer (OPL). The purpose of the present study is to reveal the characteristic features of the OCT image in eyes with CRVO simulating combined CRAO/CRVO.

Methods: The subjects are 11 eyes with CRVO and macular edema simulating combined CRAO/CRVO. The control consisted of 14 eyes with typical CRVO associated with macular edema with the foveal thickness greater than 800 μm . We investigated the inner retinal thickness (IRT) ratio in the OCT images, which is the distance between inner limiting membrane (ILM) and the junction of INL/OPL divided by the total retinal thickness at 1.5 mm nasal from the fovea.

Results: Intraretinal hemorrhages were relatively sparse and the inner retinal layers showed relatively higher reflectivity in the subject eyes. The IRT ratio in the subject eyes was significantly smaller than in that of the control eyes. (median: 0.407 VS 0.539, $P=0.00025$, Mann-Whitney test).

Conclusion: Eyes with CRVO simulating combined CRAO/CRVO may be associated with ischemia in the inner retinal layers probably due to circulatory disturbance in the retinal arteries.

EP-RET-599

Postoperative results and complications of inverted internal limiting membrane (ILM) flap technique to repair macular holes

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Purpose: Inverted internal limiting membrane (ILM) flap technique has been recently developed to repair large macular holes (MHs). We investigated the closure rate, postoperative complications, and indications in cases treated at our hospital, using optical coherence tomography (OCT).

Methods: Inverted ILM flap technique was used to repair MHs in 19 eyes in 19 patients (7 males and 14 females with the average age of 68.9 ± 2.32 years) at our hospital between March 2014 and March 2016. The MH diameter ranged from 544.04 μm to 1284.76 μm . Vitreous surgery was performed on all eyes using triamcinolone acetonide, Brilliant Blue G (BBG) along with inverted ILM flap technique (circular flap in 12 eyes, free flap in 3 eyes, and temporal side investing flap in 4 eyes) and gas tamponade. Cataract surgery was also performed on 10 of the eyes.

Results: No adverse complication was observed. The MHs were closed in 16 out of 19 eyes after the initial procedure (84.2 % success rate).

Regardless of cataract surgery, the visual acuity significantly improved after the procedure from 0.73 to 0.52 (logMAR) ($p=0.030$).

Of three MHs that did not close after the initial procedure, one remained open after the second procedure due to postoperative macular pucker. Another closed after the vitreous chamber was filled with the air. The remaining MH closed after the second procedure that incorporated free flap technique. A hyperplastic change was observed 2 weeks after the surgery on one eye with a circumferential flap that is approximately twice the size of others.

Conclusions: We were able to achieve significant visual acuity improvement and favorable closure rate in large MHs by incorporating inverted ILM flap technique. However, postoperative hyperplastic changes can occur depending on the flap size. Careful selection of appropriate surgical technique is necessary to achieve increased visual performance.

EP-RET-600

AGER gene polymorphism association with exudative age-related macular degeneration development

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Purpose: To examine rs1800624, a coding variant in the AGER gene as a factor contributing to exudative AMD development in women.

Method: The study enrolled $n=186$ women with exudative AMD and $n=508$ healthy control women. The genotyping was carried out using real-time PCR method.

Results: The analysis revealed that each copy of allele T at rs1800624 was associated with 2.24-fold decreased risk for exudative AMD development in women.

Conclusion: Our results revealed that rs1800624 polymorphism is associated with decreased risk for exudative AMD in women.

EP-RET-601

Outcomes of low-fluence photodynamic therapy in cases with chronic central serous chorioretinopathy

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Purpose: To report the long term outcomes of low-fluence photodynamic therapy (LF-PDT) in chronic central serous chorioretinopathy (cCSCR).

Methods: 27 eyes of 26 patients with cCSCR underwent a single session of LF-PDT were enrolled. Additional session of LF-PDT or intravitreal aflibercept injections (IAI) were available from month 4 if the subretinal fluid (SRF) recurred or best-corrected visual acuity (BCVA) was decreased. Demographics and ophthalmologic examination at pre and posttreatment visits were noted.

Results: Of the 26 patients (M/F=19/7), mean age was 44.1±11.0 years (18-67) and mean follow-up was 17.0±24.0 months (3-120). Baseline and final mean BCVA scores were 0.53±0.24 and 0.61±0.26, respectively (p=0.049). Initial mean scores of central foveal thickness and maximum height of SRF were 346.6±130.6 µm (155-704) and 158.2±97.2 µm (35-469), whereas those were measured as 222.3±79.2 µm (109-465) and 37.4±64.1 µm(0-224) at the last visit, respectively (p<0.001 for each).

Visual recovery with resolution of SRF was achieved with a single session of LF-PDT in 22 eyes (81.5%), however 2 eyes (7.4%) required a second session. In the remaining 3 eyes, IAI with a mean application of 3.3±2.5 (1-6) times were performed.

At the end of the follow-up period 18 eyes (66.7%) maintained complete SRF resolution, BCVA recovery or stabilization were found in 13 (48.1%) and 10 (37.0%) eyes, respectively. Integrity scores of external limiting membrane, ellipsoid zone, cone outer segment tips line (COST), and retinal pigment epithelium were 70.4%,18.5%,0%, and 81.5% at baseline;and 92.6% (p=0.024), 51.9% (p=0.163), 25.9%, and 96.3% (p=0.033) at the last control, respectively. Reestablishment of COST line integrity after treatment was found to be associated with better visual outcomes(p=0.006).

Conclusion: At the end of the follow-up period, BCVA decrease was present in 14.8% of the study eyes. With its single session monotherapy success of %81.5, LF-PDT was found safe and effective in cCSCR therapy.

EP-RET-602

Repeatability of retinal and optic nerve thickness measurements with Spectralis OCT in children

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Purpose: The aim of this study was to evaluate the repeatability of retinal and optic nerve parameters measured by spectral-domain optical coherence tomography (SD-OCT) in a healthy pediatric population.

Method: A Spectralis OCT (Heidelberg Engineering, Germany) device was used to perform peripapillary retinal nerve fiber layer (RNFL) thickness measurements, and the retinal thicknesses were evaluated with the grid of the Early Treatment Diabetic Retinopathy Study (ETDRS). To assess the repeatability of repeated measurements, intraclass correlation coefficients (ICCs) in the 9 areas of the ETDRS grid and in the 7 areas of the optic nerve image were calculated. The ICC was defined as the ratio of the between-subject variance and the sum of the pooled within-subject and between-subject variances. The study's ICC interpretation considered nearly perfect when the ICC value exceeded 0.8.

Results: Retinal thickness of a total of 76 healthy eyes, 32 boys and 44 girls, was assessed, and the RNFL in a total of 81 healthy eyes, 35 boys and 46 girls, was included. Their mean age was 8.09 ± 2.82 years and 7.58± 2.88 years (range, 4-14), respectively. All obtained retinal ICCs when the measures were performed by the same observer were higher than 0.8. The ICCs of the data obtained at optic nerve ranged between 0.920 and 0.991, and at the retina between 0.823 and 0.993. Neither optic nerve repeatability nor any of the areas of the ETDRS grid showed statistically significant differences between younger and older children when children were divided into groups older than 6 years and 6 years or younger, ICCs values remained over 0.8 after this division.

Conclusion: In healthy pediatric eyes highly repeatable measurements of the RNFL and the retinal thickness can be obtained by Spectralis-OCT, and this repeatability seems to be age-invariant.

EP-RET-603

Rs2108622 gene polymorphism association with early age-related macular degeneration

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Purpose: To determine frequency of CYP4F2 rs2108622 genotype in the patients with early AMD and the control subjects by gender.

Method: The study enrolled n=190 patients with early age related macular degeneration (AMD) and a random sample of the population n=210 (reference group). The genotyping of Rs2108622 was carried out using the real-time polymerase chain reaction method.

Results: The analysis of Rs 2108622 gene polymorphism did not reveal any differences in the distribution of C/C, C/T, and T/T genotypes between patients with early AMD and control group (51.6%, 42.6%, and 5.8% vs. 53.33%, 39.05% and 7.62%, respectively).

Conclusion: Rs2108622 gene polymorphism had no predominant effect on the development of early AMD development.

EP-RET-604

Neurosyphilis with sudden low visual acuity without other signs or symptoms: a case report

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Purpose: The objective of this report is to describe a case of ocular involvement by syphilis in a female patient, 42 years old, housewife, with no previous history, complaining of sudden low visual acuity and without other signs or systemic symptoms.

Case report: LAS, 42, female, housewife. At the exam she presented visual acuity (VA) in the right eye of counting fingers at 4 meters and in the left eye 0,2 (logMAR) with the best correction. Anterior biomicroscopy and retinal mapping without alterations that justified the visual acuity. After an examination of angiofluoresceinography, she presented findings compatible with neuroretinitis. Examinations were requested for investigation of inflammatory and infectious causes, and neurosyphilis was diagnosed due to ocular involvement. She was hospitalized for intravenous antibiotic therapy, presenting good improvement after treatment, reaching visual acuity in the right eye of 0,1 and in the left eye of 0.

Conclusion: Although there is a risk of irreversible visual loss, early diagnosis may prevent such outcome. Thus, even without obvious clinical signs of physical and ocular examination, it is important to investigate with complementary exams, imaging and laboratory tests, and always remember that syphilis may be a differential diagnosis.

EP-RET-605

Cholesteryl ester transfer protein gene polymorphisms (rs5882, rs708272 rs1800775) association with macular pigment optical density in healthy patients

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Purpose: To determine CETP rs5882, rs708272 rs1800775 genotypes associations with macular pigment optical density (MPOD) in ophthalmologically healthy participants of Lithuanian origin.

Method: 102 participants (204 eyes) healthy subjects were included into our study. The optional macular pigment density module for the Visucam 500 used the reflectance of a single 460-nm wavelength based on a single blue-reflection fundus image to determine MPOD and its spatial distribution. The genotyping of rs5882, rs708272 rs1800775 was carried out using the real-time polymerase chain reaction method.

Results: There were no significant differences between MPOD as a function of genotypes CETP rs5882 AA (0.111± 0.021), AG (0.120±0.112), GG (0.115±0.028), p=0.208, CETP rs708272 AA (0.118±0.018), AG (0.116±0.089), GG (0.113±0.02), p=0.104, and CETP rs1800775 CC (0.111±0.02), CA (0.117±0.085), p=0.675.

Conclusion: Our results indicate that macular pigment deposition within the central retina does not depend on genes (rs5882, rs708272 rs1800775) involved in lipid metabolism in healthy people.

Keywords: Macular pigment optical density, Cytochrome P450, gene polymorphism.

EP-RET-606

Choroidal thickness changes after the accomplishment of aerobic exercise

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Purpose: To evaluate the changes of choroidal thickness after doing physical aerobic exercise in healthy young adults using spectral-domain optical coherence tomography (SD-OCT), with Enhanced Depth Imaging (EDI) protocol, and manual segmentation.

Method: Thirty eyes of 15 volunteers between 18 and 31 years old were prospectively and consecutively enrolled, with ±6.50 D maximum ametropia and 3.00 D of astigmatism, with neither systemic nor ocular pathology. All the subjects were examined in the same conditions and by the same investigator. Measures from autorefractometry, ocular biometry and SD-OCT were taken. The SD-OCT images were taken at basal measurement, after doing 10 minutes of physical exercise and then two more measures after the exercise (3 and 10 minutes after finalization). The choroidal was manually segmented, valuing thicknesses and volumes in the different areas from the ETDRS (Early Treatment Diabetic Retinopathy Study).

Results: In all the areas the average thickness increased 3 minutes after exercise compared to basal. We found significant differences (p< 0.05) by means of the test of ranks with signs of Wilcoxon in the areas: 3 mm temporal, 3 mm nasal, 6 mm superior, 3 mm superior and in the subfoveal choroidal thickness. After 10 minutes, this value decreased, finding only statistical values (p< 0.05) in the subfoveal choroidal thickness. Volumes measures showed the same pattern.

Conclusion: In healthy young people 3 minutes after finishing physical exercise the choroidal thickness increases. Ten minutes after the finish, the choroidal thickness decreases.

EP-RET-607

Long-term anatomical and functional outcomes in patients with ischemic central retinal vein occlusion treated with anti-VEGF agents

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Purpose: To evaluate the anatomical and functional outcomes in patients with ischemic central retinal vein occlusion (CRVO) treated with intravitreal anti-vascular endothelial growth factor (anti-VEGF) agents.

Method: This retrospective study included 15 treatment naive patients with ischemic CRVO and macular edema, who were treated with intravitreal ranibizumab or aflibercept. The main outcomes were the evolution of retinal ischemia over time, as well as the change in best corrected visual acuity (BCVA) and in central subfield thickness (CST) at month 24.

Results: At month 24, patients with ischemic CRVO gained +7.8 letters compared to baseline, while there was a significant decrease in CST by 243.7 µm. At baseline, ischemia was located mainly at the peripheral retina, while 6.6% of patients presented macular ischemia. At month 24, 20% of patients had

macular ischemia, which was found to be negatively correlated with BCVA. The patients with macular ischemia had very poor final visual outcome and were advised to discontinue treatment.

Conclusion: Our study showed that anti-VEGF treatment was effective in patients with ischemic CRVO, since it reduces macular edema and maintains or improves VA in a long-term follow-up of 24 months. It is worthy to note that in a small proportion of patients (13.3%) peripheral ischemia progressed to macular ischemia over time. In cases where macular ischemia is present, anti-VEGF treatment does not seem to offer any improvement in VA.

EP-RET-608

Serum molecular signature for proliferative diabetic retinopathy in Saudi patients with type 2 diabetes

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Purpose: The risk of vision loss from proliferative diabetic retinopathy (PDR) can be reduced with timely detection and treatment. We aimed to identify serum molecular signatures that might help in the early detection of PDR in patients with diabetes.

Methods: A total of 40 patients with diabetes were recruited at King Khaled Eye Specialist Hospital in Riyadh, Saudi Arabia, 20 with extensive PDR and 20 with mild non-proliferative diabetic retinopathy (NPDR). The two groups were matched in age, gender, and known duration of diabetes. We examined the whole genome transcriptome of blood samples from the patients using RNA sequencing. We built a model using a support vector machine (SVM) approach to identify gene combinations that can classify the two groups.

Results: Differentially expressed genes were calculated from a total of 25,500 genes. Six genes (*CCDC144NL*, *DYX1C1*, *KCNH3*, *LOC100506476*, *LOC285847*, and *ZNF80*) were selected from the top 26 differentially expressed genes, and a combinatorial molecular signature was built based on the expression of the six genes. The mean area under receiver operating characteristic (ROC) curve was 0.978 in the cross validation. The corresponding sensitivity and specificity were 91.7% and 91.5%, respectively.

Conclusions: Our preliminary study defined a combinatorial molecular signature that may be useful as a potential biomarker for early detection of proliferative diabetic retinopathy in patients with diabetes. A larger-scale study with an independent cohort of samples is necessary to validate and expand these findings.

EP-RET-610

Clinical and tomographic profile in patients diagnosed for the first time of neovascular AMD in clinical practice

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Purpose: To study the clinical and tomographic profile of patients diagnosed with neovascular AMD in clinical practice.

Method: Retrospective study. Participants included were diagnosed, from July 1st of 2014 through July 1st of 2015, of neovascular DMAE for the first time and began anti-VEGF treatment at our center. Data were collected from electronic medical history. The tomography study was performed with the Cirrus-HD system (Carl Zeiss Meditec, Dublin, CA, USA).

Results: Sixty seven patients (69 eyes) were included. The mean age was 78.7 years and 44.9% of the participants were men and 55.1% were women. Regarding the clinical profile they presented: HTA 82.6%, DM 26.1%, active smokers 20.3%, ex-smokers 27.5%. The distribution of choroidal neovascularization was: Type I 34.7%, type II 21.7%, type III 28.9% and mixed 14.4%. The mean RPE elevation volume was 0.36 mm³ for the 3 mm circle and 0.66 mm³ for the 5 mm circle.

Conclusion: Clinical and tomographic profile resembles other published national and international studies. Patients are elderly, have cardiovascular risk factors and have type I neovascular membrane as the most frequent.

EP-RET-611

Use of the fluocinolone acetonide implant (ILUVIEN) in a patient with chronic diabetic macula oedema and central foveal thickness less than 400 microns at baseline - a case study and FAME subgroup data

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Purpose: To assess the clinical outcomes (visual acuity [VA], central subfield thickness (CFT) and intraocular pressure [IOP]) in an eye with a baseline CFT < 400 µm and treated with a FAc implant. 74% of DMO patients are estimated to have a central foveal thickness (CFT) < 400 micron and yet NICE has not recommended the use of ranibizumab, aflibercept, or dexamethasone for this group of patients. In contrast, NICE does not define the use of ILUVIEN based on CFT, meaning that provided prior laser has been used as a prior therapy the patient is suitable for a fluocinolone acetonide (FAc) implant.

Method: The patient was treated in the Medical Retina Unit at Kettering General Hospital and monitored over a 6-month period post-ILUVIEN injection.

Results: Baseline logMAR VA was 0.6, CFT was 380 microns and IOP was 14 mmHg. With a single implant, VA improved at month six to 0.3 in the treated eye. Over the same period, macular edema completely resolved and IOP remained the same.

Conclusion: NICE did not use CFT as a criterion to define a patient population recommended for treatment with ILUVIEN. In this case treatment with the FAc implant led to an overall improvement in VA in the treated eye. These findings are complemented by the FAME study outcomes which showed that ILUVIEN is equally efficacious in patients with chronic DMO regardless of CFT.

EP-RET-612

Subtenon triamcinolone in the treatment of post-operative uveal effusion in a hypermetropic patient following routine cataract operation

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Purpose: We describe successful treatment of a case of post-operative uveal effusion in a hypermetropic patient following routine cataract operation.

Method: Following successful right cataract surgery one year ago, an 86 year-old lady was found to have exudative retinal detachment with choroidal detachment in the left eye following straightforward left cataract surgery two weeks post-operatively. She has a background of hypermetropia and narrow

angle glaucoma treated with previous YAG peripheral iridotomies. Her axial length in the affected eye measured 20.78mm (Zeiss IOL master).

Results: She was systemically well, and had normal blood pressure. Visual acuity in the operated eye was 6/48 improving to 6/38 with pinhole. Examination demonstrated minimum intra-ocular inflammation. Intra-ocular pressure was normal at 17mmHg. Dilated fundus examination was in keeping with multiple temporal, nasal as well as inferior choroidal effusions and sub-retinal fluid involving the macula. There was no evidence of vitreous haemorrhage. No retinal breaks were identified. Fundoscopy of the fellow eye was normal. Ultrasound B scan did not demonstrate any suspicious mass lesions posteriorly. Of note she does have a short axial length and hypermetropia and this may be contributory. Surgical options were limited by her overall medical status and patient choice. Urgent vitreoretinal opinion was sought and she was treated with initial observation followed by peri-orbital Triamcinolone with significant response in the way of regression of exudative subretinal fluid and recovery of vision.

Conclusion: Uveal effusion syndrome that is either idiopathic or hypermetropic by aetiology is a diagnosis of exclusion. We describe uveal effusion resolution following posterior subtenon Triamcinolone. We propose that this approach offers a safe, effective management alternative to alternative scleral window surgery.

EP-RET-613

Reperfusion effect of vitrectomy for diabetic retinopathy

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Purpose: Vitrectomy may play an important role of the reperfusion growing-up in non-perfused area of Diabetic Retinopathy.

Subjects: 98 eyes analyzed, first visit to our clinic between 2012 January ~ 2015 July. Male 37 cases/Female 29 cases. Age ~ 29 - 84 y.o.(ave. 57.5 ±12.8 y.o.) Follow-up 3 - 53 (ave. 21.4 ±11.9) mos DRgravity ~ pre PDR 41 eyes, PDR 57 eyes (NVD:20 NVE:37)

98 eyes were divided into 3 groups according to received therapy. Observation - 19, Photocoagulation - 55, Vitrectomy - 24.

Method: Fluorescein Angiograms (pre-op, post-op) performed repeatedly. Findings of angiogram stored by the filing system IMAGEnet (Topcon). Compared the series of repeated angiograms to evaluated findings as follows:the reperfusion process/the occlusion-progress process. Temporal raphe area (TRA*) evaluated.

Results: Reperfusion occur ~ Vitrectomy - 10/24 (42%), Photocoagulation - 11/55 (20%), Observation - 1/19 (5%).

Conclusion: Reperfusion occurs in Diabetic Retinopathy. Vitrectomy helps the process of reperfusion.

EP-RET-614

Anatomic and functional impact in paracentral acute middle maculopathy

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Purpose: To analyze the functional and anatomic impact of retinal changes secondary to deep retinal plexus ischemia.

Methods: Three patients with deep retinal plexus ischemia were included. The visual assessment was analyzed by visual acuity measurement and microperimetry.

A morphometric assesment was performed with structural and angiographic optical coherence tomography, multispectral imaging and fundus photograph.

Results: Three patients (2 males and 1 female; age 58-72) were included. Visual acuity remained stable throughout the follow-up (range:20/40-20/20). A hyperreflective edema was observed at baseline within the intermediate retinal layers; this evolved into atrophy after an average of 5 weeks of follow-up. Multispectral imaging of ischemic areas changed from brownish to almost normal coloration. Microperimetry evidenced a persistent paracentral scotoma which decreased centripetally through the follow-up.

Conclusion: A functional and anatomic correlation was observed in patients with deep retinal plexus ischemia. Further studies are warranted in order to better understand the pathogenesis of this entity.

EP-RET-615

Optical coherence tomography examination of macular edema in ophthalmic vascular diseases

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Purpose: Macular edema, defined as thickening and inflammation of the macula, is a pathological phenomenon that impairs the functionality of the macula with vision loss. The aim of this study is to analyse a number of patients having macular edema and to quantify them according to their pathology using ocular coherence tomography (OCT).

Method: This study included a total number of 124 patients investigated and treated for macular edema. In the study were included only the patients with macular edema caused by a vascular disorder, such as central retinal vein occlusion (CRVO), central retinal artery occlusion (CRAO) and diabetic retinopathy (DR). Macular thickness was measured with OCT at nine macular subfields defined by ETDRS.

Age, sex, hypertension, diabetes, visual acuity, slit lamp and fundus examination were assessed.

Results: The most frequent cause of macular edema was CRVO (72 patients) followed by DR (38 patients) and CRAO (14 patients). The mean age was 62.09 (35-82) years. Both CRVO and CRAO are more frequent in the 7th decade and DR in the 6th decade. The mean central thickness was 495.7 microns in CRVO group, 353.07 microns in CRAO group and 328.18 microns in DR group. The mean cube average thickness was 337,81 microns in CRVO group, 271,15 microns in CRAO group and 411,73 microns in DR group.

When we analyzed each macular subfield we observed that in vascular occlusion the most affected area was the fovea (50% of cases), but in DR the composite inner region was affected the most (76% of cases).

Conclusion: Optical Coherence Tomography is a great method for evaluating patients with macular edema. All the patients with macular edema had shown abnormal values of both central thickness of macula and cube average thickness of macula. The macular area most affected varies with the etiology of macular edema. The major cause of macular edema is central retinal vein occlusion.

EP-RET-616

The vitreous level of pigment epithelium-derived factor - PEDF in patients with proliferative diabetic retinopathy

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Purpose: to study the relationship between the level of PEDF in the vitreous and some clinical factors, which characterized the functional activity of the retina, in patients with proliferative diabetic retinopathy (PDRP) after vitrectomy.

Method: There were observed 70 patients (70 eyes) with PDRP with positive anatomic results in a period of 2 month after vitrectomy. The indication for surgery in 35 eyes was vitreous hemorrhage without epiretinal membrane, in 28 eyes tractional retinal detachment which involved the macula and 7 eyes tractional-rhegmatogenous retinal detachment. The level of PEDF was studied by ELISA method. Also were studied ERG on weak flash after dark adaptation - scotopic ERG (rod response), simple cone response after light adaptation - photopic ERG, under conditions of light adaptation of oscillatory potentials (OP), flicker-response - ERG to the stimuli presented with a frequency of 30Hz (rhythmic ERG), and standard combined ERG (maximal response in dark adapted eye).

Results: The middle level of PEDF in the vitreous was 3,26 SD (1,57) ng / ml. The content of PEDF in patients with vitreous hemorrhage was significantly higher than in patients with tractional macular detachment ($t = 2,35$, $p = 0.022$). The level of PEDF lower than median (3,12 ng/ml) in the vitreous was connected with retinal ischemia, which were proved by electrophysiological methods of investigation, particularly oscillatory potentials.

Conclusion: The low level of PEDF in the eye promotes the development of neurodegenerative processes in the retina, most suffered bipolars, amacrine and Muller cells. Index of photopic and rhythmic ERG and oscillatory potentials can reflect the content of PEDF in the eye and can be used in future studies to examine the role of this factor in the pathological processes in the eye.

EP-RET-617

Rs890293 gene polymorphism association with early age-related macular degeneration

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Introduction: Age-related macular degeneration (AMD) is a disease affecting the central part of the retina, called macula, which significantly induce the eyesight and leads to irreversible central vision loss. AMD has a multifactorial etiology, involving environmental, metabolic, functional and genetic factors. It is known that some genes, their polymorphisms play relevant role in pathogenesis of AMD. As *CYP2J2* gene encodes cytochrome P450 proteins, which are involved in metabolism of cholesterol, steroids and other lipids, for this reason it was selected for investigation in our research.

Purpose: to determine the association between *CYP2J2* (-76G>T) *Rs890293* gene polymorphism and early AMD.

Methods: The study involved 204 patients with early AMD and 294 control individuals. DNA was obtained from patients' white blood cells, taken from venous blood. Samples of DNA were purified and analyzed using commercial kits. The genotyping of *Rs890293* was carried out using real-time polymerase chain reaction method.

Results: The *CYP2J2 Rs890293* TT genotype was statistically significantly less frequent in patients with early AMD than in control individuals: 0 % vs. 2.5 % ($p=0.028$). Also, *Rs890293* TT polymorphism was statistically less common in AMD patients comparing to control group persons in older age group (≥ 65 years): 0% vs. 5.4% ($p=0.03$).

Conclusion: *CYP2J2* gene TT genotype may be associated with reduced risk of early AMD development. Therefore, further study is required to be repeated by examining a greater sample size.

EP-RET-618

YAG laser dissection subsilicone epiretinal cords with pronounced traction component, provided the impossibility of traditional treatment

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Nowadays the only way to remove epiretinal strands regardless of etiology and degree of severity of traction component is micro-invasive vitreoretinal surgery. In some cases, usually for somatic reasons, it becomes impossible.

Purpose: Research the possibility of using YAG laser for decreasing/exclusion processes for epiretinal cords.

Method: 21 patients were studied. Main group included 12 ones, control - 9. All aged 32 to 65, the ratio of men to women 42% to 58 %. Dissection was realized at VISULAS YAG III (CARL ZEISS), the control was carried out on fundus camera AFC-230 (NIDEK) and OCT iVue 100 (Optovue) to measure the thickness of the retina at the points of fixing chords (the rate of force traction impact) and the chord length (the distance between the fixation points). In both groups the average length of the strands was $162 \pm 40 \mu\text{m}$, thickness of the retina at the points of fixing chords was $586 \pm 12 \mu\text{m}$. The observation period was 2 months.

Results: Out of patients of the main group 9 managed to achieve a complete dissection of the strands, 3 - partial dissection (because of topographic reasons). In 2 months the distance between control points increased up to $385 \pm 25 \mu\text{m}$, the thickness of retina in fixing points decreased up to $370 \pm 20 \mu\text{m}$. In 8 patients (88,9%) in the control group in 2 months the retinal thickness increased up to $640 \pm 36 \mu\text{m}$, the distance between points decreased up to $96 \pm 18 \mu\text{m}$. One patients topography has not changed.

Conclusion: The study offers a way of weakening or complete elimination of traction component with epiretinal fibrosis in patients with severe somatic pathology.

EP-RET-619

Enzymatic laminolysis by intravitreal autologous plasmin injection in Vitreomacular traction syndrome

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Purpose: to determine the effectiveness of intravitreal autologous plasmin in the treatment of Vitreomacular traction syndrome.

Methods and design: prospective case study of vitreomacular traction with epiretinal membrane treated with 0.2ml of autologous plasmin intravitreal injected under topical anaesthesia. Plasmin was obtained by a simplified method with urokinase. The degree of membranolysis was measured by the optical coherence tomography (OCT) and Best corrected visual acuity (BCVA) on ETDRS chart before and 1 hour after the plasmin injection followed by 1 week and 1 month.

Results: The epiretinal membrane became thin and loosened up but attached to the retina noticeably decreasing the secondary macular traction leading to a decrease in edema as measured by the OCT. Visual acuity significantly improved and no adverse effects were observed.

Conclusion: in our case report intravitreal injected plasmin was effective in the treatment of cellophane maculopathy improving the visual acuity and significantly decreasing the macular edema with minimal surgical intervention.

EP-RET-620

Outcomes of subtotal panretinal photolasercoagulation among patients with severe nonproliferative diabetic retinopathy

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Purpose: The aim of the study was to evaluate the dynamics of visual function in patients with severe nonproliferative diabetic retinopathy after subtotal and total panretinal retinal photolasercoagulation.

Method: 51 patients were examined (102 eyes) with type 2 diabetes and severe nonproliferative diabetic retinopathy. All patients underwent paravascular laser coagulation of the retina by applying II degree laser burns from the optic disc and vascular arcades to the average circumference. At the control examination after 3 months the following dynamics was evaluated - the main group included 32 patients with stable visual features, the remaining 19 patients underwent additional paravascular retinal laser photocoagulation to full panretinal (control group).

Results: Visual acuity in the study group ($0,67 \pm 0,29$) was significantly higher ($p = 0,03$) than in the control group ($0,51 \pm 0,22$), which may indicate that the expressed disturbances of visual functions prior to treatment is a poor predictor of trends in terms of distant disease. Both groups of patients had

depression sensitivity of the retina in the early period after the laser treatment was performed. However, at follow-up examination after 3 months, a strong tendency to restore sensory function of the retina was observed, which persisted further dynamic observation.

Conclusion: 1. Performing subtotal panretinal lasercoagulation can achieve long-term stabilization of retinal conditions, and does not affect the ability to perform work functions, as well as overall visual acuity in patients post treatment, as determined during long follow up.

2. In the group of patients, who underwent subtotal lasercoagulation, we observed more favorable indicators of visual acuity, sensitivity to light and thickness of the peripapillary zone, than in the control group.

EP-RET-621

Management of diabetic macular edema by the Spanish ophthalmologists

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The DME Challenge Group

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Purpose: To describe the preferred clinical practice patterns for the management of Diabetic Macular Edema (DME) in Spain.

Method: One hundred and thirty seven ophthalmologists were given an on line survey regarding the diagnosis, follow up and treatment strategies of DME in their clinical practice. It was considered that there was a consensus whenever there was an agreement in 2/3 of the responses in each item.

Results: Regarding diagnosis there was a consensus regarding the utility of the best corrected visual acuity (BCVA), Posterior Pole Biomicroscopy (PPB) and OCT but not regarding retinography and or fluorescein angiography (FA). Only 48.3% of the ophthalmologists performed FA during diagnosis. Anti VEGF therapy was the first option for DME with central involvement (96.4%) and 67.2% started treatment with a loading phase of 3 intravitreal injections. Laser was used in very rare occasions mainly in combination in poor responders. Intravitreal steroids were the preferred option for non-responders and in those cases 91.2% used dexametasone implant. Both anatomical and functional criteria were used for retreatment and PRN was the most common regimen used in the maintenance phase.

Conclusion: This survey represents the current management patterns for DME in Spain and highlights the differences and the gaps between scientific evidence and recommendations in clinical practice.

EP-RET-622

Correlation of cystatin c to grade of diabetic retinopathy and general inflammatory markers in diabetics

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Purpose: to evaluate the Cystatin c in different grades of diabetic retinopathy and assess its' correlation to inflammatory markers.

Method: All diabetic patients without chronic kidney disease who were referred for diabetic retinopathy screening in a month were enrolled. The samples were tested for HbA1c, ESR ratio, hs-CRP and Cystatin c.

Results: Sixty seven cases were enrolled in the study including diabetics with no apparent retinopathy 19(28.3%), 22(32.8%) non proliferative retinopathy and 26(38.8%) proliferative retinopathy patients. The mean age, sex, duration of diabetes, hypertension, dyslipidemia and smoking status and hemoglobin A1c level distributions were not significantly different between three groups. The mean level of Cystatin-C increases significantly 1.1 ± 0.48 , 1.22 ± 0.38 and 1.71 ± 0.92 ($p=0.007$), respectively as retinopathy progress. The Cystatin c level was correlated to hs-CRP and ESR level.

Conclusion: This study showed Cystatin c level increased as diabetic retinopathy progressed and its' level was correlated to inflammatory markers. It could be used as a predictive marker by primary care physicians to distinguish patients at higher risk of microvascular complications like diabetic retinopathy. Larger randomized studies are warranted to confirm these findings.

EP-RET-623

Drug changing in anti-angiogenic therapy of macular oedema due to retinal vein occlusion and exudative age-related macular degeneration

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Purpose: Study the effectiveness of aflibercept therapy of exudative age-related macular degeneration (AMD) and macular oedema (MO) due to retinal vein occlusion (RVO) after ineffective therapy with bevacizumab.

Method: Analyzed clinical cases of the first experience with the drug aflibercept, used as a shift of bevacizumab, that was used as a starting intravitreal therapy, but showed insufficient clinical effect in patients with wet AMD and MO due to RVO.

Insufficient clinical effect was considered when there was persistent MO in RVO and persistence of exudative component in wet AMD defined by OCT after three monthly intravitreal injections, and the absence of positive dynamics after the fourth injection of bevacizumab.

We observed ten patients with RVO and five with wet AMD who underwent intravitreal treatment with bevacizumab, followed by a change of therapy to aflibercept. In all patients, OCT performed monthly evaluated the presence or absence MO, neuroepithelial detachment and/or detachment of the retinal pigment epithelium, visual acuity was measured.

Results: All patients initially received three monthly intravitreal injections of bevacizumab, however, intra/subretinal exudation remained and fourth subsequent intravitreal injection of bevacizumab did not result in positive changes on OCT and visometry.

After two subsequent injections of aflibercept according to OCT a complete response to therapy was achieved, namely the absence of signs of exudation in all patients, which was accompanied by an increase in visual functions.

Conclusion: Both anti-VEGF drugs lead to positive changes on OCT and improvement of VA in patients with wet AMD and MO due to RVO. Taking into account the different costs of anti-VEGF drugs, it is possible to begin treatment with bevacizumab provided its availability in ophthalmology, but insufficient clinical effect and persistence of exudation can be eliminated by change to another anti-VEGF drug (aflibercept).

EP-RET-624

Results of a diabetic retinopathy screening and risk factors associated

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Purpose: To determine the prevalence of diabetic retinopathy (DR) and macular edema (DME) in patients with diabetes mellitus from our geographic area and their relationship with some risk markers.

Method: We conducted a cross-sectional study which included 331 diabetic patients (type1 and 2), who attended our department during the second semester of 2016. All patients were examined using slit-lamp bio microscopy completed by fluorescein angiography by ophthalmologic specialists. A physical examination and the appropriate biological investigations were also carried out. An analysis was made on the possible association between patient factors and the presence of DR and DME. Statistical significance was determined by the Chi-square test and Student-T Independent test. A value of $p < 0.05$ was considered statistically significant.

Results: Mean age was 53.1 ± 15.5 (mean \pm SD) years; duration of diabetes, 12.7 ± 8.8 years; glycosylated hemoglobin (HbA1c), $10.0 \pm 2.1\%$; systolic blood pressure (SBP), 126 ± 17 mm Hg; diastolic BP, 78 ± 37 mm Hg. Of all study patients, 43.5% were male

and 82.5% were diabetes type 2. DR was present in 47.2% of this cohort and DME in 5.7%.

We found significant associations between DR and educational level, physical activity, high BP, dyslipidemia, type of diabetes and also with mean levels of the duration of diabetes and dyslipidemia, SBP, HbA1c, LDLcholesterol, creatinine clearance, and the use of insulin.

In addition, the presence of DME was significantly associated with the presence of dyslipidemia and of DR, the use of insulin and the men levels of SBP and HbA1c.

Conclusion: In this study, we identified various clinical features that are associated with the development of DR and DME although this was a cross-sectional analysis and the population was relatively small. These factors should be taken into account when designing efficient screening strategies for retinal dysfunction. Such studies may shape the future of clinical management of patients.

EP-RET-625

Differences in choroidal thickness with spectral domain and swept source OCT in healthy subjects

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Purpose: To compare the measures of choroidal thickness in healthy subjects obtained using two different Ocular Tomography Coherence (OCT) devices, Spectral Domain Optical Coherence Tomography (SD-OCT), Spectralis OCT, and Swept Source (SS-OCT), Triton OCT.

Method: Thirty eyes from 30 healthy young volunteers were enrolled. The inclusion criteria were a maximum ametropia of ± 6.00 D and astigmatism <3.00 D with no systemic or ocular diseases. All of the subjects were examined under the same conditions and by the same investigator. Measurements of autorefractometer, ocular biometry, SD-OCT with Enhanced Depth Imaging (EDI) fast macula protocol and manual segmentation and SS-OCT with 3D protocol: Macula (V/H) and automatic segmentation were performed.

Results: The lowest choroidal thickness was found in the nasal area 6 mm with both devices. Higher values of choroidal thickness in all areas of the Early Treatment Diabetic Retinopathy Study (ETDRS) were found using SD-OCT compared to SS-OCT. These differences were statistically significant ($p < 0.05$) in all areas except the inferior area 3 mm.

Conclusion: Optical Coherence Tomographies, both the SD-OCT with the EDI protocol and the SS-OCT automatically are able to examine the choroidal vascular layer and the choroidal thickness at the ETDRS grid. SD-OCT obtains thicker choroidal thickness values than the SS-OCT ones. The thinnest choroidal thickness obtained by both OCT is the nasal area 6 mm, followed by the temporal, 6 mm area and the inferior 6 mm area.

EP-RET-626

Relationship between immunohistochemistry findings and OCT hyperreflective outer retinal bands

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Purpose: The aim of this study was to correlate the four hyperreflective bands observed in the OCT at the foveal level with the histological structures using human retinal sections and immunocytochemistry.

Method: Vertical cryosections of human retinas were immunostained with antibodies specific for cones photoreceptors, bipolar cells, Müller and RPE cells and mitochondrion markers, and visualized using confocal microscopy. Triple immunolabeling allows to distinguish between cell types and different cell compartments. All sections were obtained at the foveola region.

Results: CRALBP and cytochrome C immunolabeling revealed that the hyperreflective bands 1 and 2, observed in the OCT, correspond to the OLM and the ellipsoids separated by the cone myoids. CRALBP, Cytochrome C and GNB3 showed that the RPE interdigitations extend throughout the length cone outer segments allowing us to discard that the third band may correspond to the cone interdigitations. However, the colocalization of small fragments of

outer segments identified by GNB3 or cone arrestin with RPE cells identified with antibodies against CRALBP allowed us to characterize the third band as the cone phagosomes in the top of the RPE. We propose that the fourth band corresponds to the accumulation of mitochondrion at the basal portion of the RPE and the hyporeflexive band between band 3 and 4 corresponds to the melanosomes at the apical portion of the RPE that absorbed light.

Conclusion: Our immunohistochemical demonstration that the bands 1 and 2 correspond to the OLM and the ellipsoids respectively. The band 3 corresponds to the cone phagosomes into the RPE indicating the adequate functional relation between cones and RPE. The fourth band may be the reflection of the basal mitochondrion of the RPE.

EP-RET-627

Ocular manifestations of the Sjogren-Larsson syndrome

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Purpose: To report the ocular findings of a patient with the Sjogren-Larsson syndrome (SLS).

Method: Retrospective chart review of a 42-year-old patient with the SLS. Patient underwent a comprehensive eye examination including slit-lamp biomicroscopy and indirect ophthalmoscopy. Fundus photography, macular OCT, and fundus auto-fluorescence were done.

Results: A 42-year-old male patient with the SLS whose clinical features included: congenital ichthyosis; neuromuscular abnormalities; and cognitive impairment. Fundus examination showed sharply circumscribed macular lesions with associated crystalline deposits surrounding lesions in both eyes. OCT showed marked foveal atrophy in both eyes.

Conclusion: The SLS is a rare neuro-cutaneous disorder characterized by defective activity of fatty aldehyde dehydrogenase, leading to failure of degradation of fatty aldehydes. Herein, we present this case due to its rarity and its well-defined ocular manifestations. All patients with congenital ichthyosis, spastic paresis and cognitive impairment should be evaluated for SLS. Ophthalmic examination may play a crucial role in diagnoses of this rare disease.

EP-RET-628

Assessment of induced inflammation in patients after retinal detachment vitreoretinal surgery

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Purpose: To develop an approach allowing to optimize endolaser photocoagulation in surgical treatment of retinal detachment decreasing the risk of postoperative complications which should improve both anatomical and functional outcomes of retinal detachment surgery.

Method: The study was involved analysis of 172 patients. First group included 78 patients treated for rhegmatogenous retinal detachment employing endolaser photocoagulation. First group of patients were divided into 3 subgroups depending on the amount of endolaser photocoagulation. Second group (n=46) and third group (n=48) were used as patients with a control. Of the second group were treated for macular hole with silicone oil tamponade. Patients with

macular hole and epiretinal membrane after previous vitrectomy comprised control group third. In control groups endolaser photocoagulation wasn't used. We assessed C-reactive protein (CRP) level in blood before and after surgery. **Results:** On the basis of the study base level of CRP determined in first group 1 ± 0.4 mg/l and marked increased on this levels 24 hours after the surgery to 4.8 ± 0.8 mg/l. In the subgroup with endolaser photocoagulation 986 ± 178 applications and energy 451.9 ± 126.2 J- CRP 1-st day was 8.5 ± 1.84 . There was obvious statistically significant between intraoperative injuries caused by endolaser photocoagulation, CRP level increase, and intensity of inflammatory response.

Conclusion: CRP level indicates inflammatory process caused by endolaser photocoagulation. Increased CRP level shows subclinical inflammatory process and is associated with increased risk of pathological membranes formation. Presence of silicone oil in vitreous cavity doesn't induce inflammatory response or statistically significant changes in CRP level. Excessive intraoperative retinal burns may be one of the risk factors of postoperative inflammatory reaction development. It seems reasonable to reduce amount of endolaser photocoagulation to the minimum necessary level.

EP-RET-629

Early detection of diabetic macular edema using teleophthalmology in a diabetic retinopathy screening program in Canary Islands

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Purpose: To analyse teleophthalmology results in early detection of diabetic macular edema (DME) in a diabetic retinopathy screening program.

Methods: Retrospective non-interventional study was conducted from September 2012 to October 2014. We included all patients referred to our hospital from the diabetic retinopathy screening program because of suspect of DME. The program is based on a single-field, 45°, non-mydratic retinography and patients with DME suspected are sent to our hospital.

Results: A total of 139 eyes of 109 patients were identified from 6.325 patients reviewed; however only 70,64% of the patients came to the appointment (107 eyes of 77 patients). The mean time waiting for the consult was $2,52 \pm 1,87$ months. We found DME with ETDRS criteria in 81 eyes (75,70%) in the retinography. In 47 eyes (43,92%) treatment was indicated in the first consultation. Using "LET" classification for DME, we found that 43,92% were central edemas and only 9 eyes presented tractional DME.

Conclusion: Diagnosis of DME with a single-field retinography is a challenge for ophthalmologists.

In our study, when reviewing retinographies the suspicion of DME that could require treatment was high in most of patients; however, after the patient examination, the number of patients treated was smaller.

EP-RET-630

PED follow-up assessment in AMD patients treated with ranibizumab

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Purpose: To analyze short-term changes in retinal pigment epithelium (RPE) elevation in patients with neovascular age-related macular degeneration (AMD) treated with intravitreal ranibizumab (IVR) in routine clinical practice.

Method: Retrospective and descriptive study of patients with neovascular AMD diagnosed between July 2014 and July 2015, both included, who had started treatment with IVR. Changes in RPE elevation area and volume were analyzed, among other tomographic variables, both at the beginning and at 6 months of treatment. The tomography study was performed with the Cirrus-HD system (Carl Zeiss Meditec, Dublin, CA, USA).

Results: A total of 43 eyes were included, with a mean distance from the RPE elevation to the fovea of 1.15 mm (± 1.88), which at 6 months was reduced to 0.64 mm (± 0.72) ($p = 0.05$). Baseline RPE elevation volume was 0.30 mm³ (± 0.44) and 0.44 mm³ (± 0.74) for circles of 3 and 5 mm respectively ($p = 0.04$), whereas at 6 months it was 0.18 mm³ (± 0.26) and 0.24 mm³ (± 0.31) ($p = 0.032$). Initial cube volume was 11.23 mm³ (± 1.48), and at 6 months it was 9.74 mm³ (± 1.06) ($p < 0.001$). At diagnosis, the mean macular thickness was 371.3 microns (± 97.37), being at 6 months 265.41 (± 74.22) ($p < 0.001$).

Conclusion: The volume of RPE declines significantly in patients with neovascular AMD treated with IVR in routine clinical practice, although to confirm these findings requires longer-term follow-up.

EP-RET-631

Endophthalmitis prevention following intravitreal injections

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Purpose: To determine whether topical postoperative antibiotic prophylaxis at home does prevent endophthalmitis after intravitreal injections (IVI) in a higher rate compared with a single drop of topical antibiotic at the end of the procedure.

Method: Comparative retrospective study in which 2155 IVI were included (mean age of patients was 74 ± 11.6 years old) during 11 months. All patients were treated in the same office-based location, under the same conditions with povidone-iodine prior and after injection. The first group of patients was treated with topical ciprofloxacin drops 3mg/ml 3 times a day for 5 days at home (1417 IVI). The second group was treated with a single drop of the same antibiotic at the end of the procedure (738 IVI). Intravitreal drugs were Aflibercept (1188 IIV), ranibizumab (962 IIV), and Bevacizumab (5 IIV).

Results: Endophthalmitis incidence in the first group was 3/1417 (0.2%), two cases with aflibercept and the other one with ranibizumab. Meanwhile, in the second group no cases of endophthalmitis were reported (0%). There were no significant differences between the groups (Fisher test $P > 0.05$).

Conclusion: Topical postoperative antibiotic prophylaxis at home the days following IVI did not show any protector effect over endophthalmitis incidence. Its use should be reconsidered in order not to select more virulent microorganisms, avoid corneal epithelium problems due to preservatives contained in some eye drops, and improve the quality of life of patients to whom eye drop instillation may be difficult.

EP-RET-632

Cardiovascular diseases risk factors assessment and relationship with age-related macular degeneration

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Purpose: The aim of this work is to evaluate how the presence of cardiovascular diseases (CVD), CVD risk factors, severity of carotid atherosclerosis and CVD treatment are related to age related macular degeneration (AMD) development.

Method: Study population was 210 patients older than 50 years with suspected AMD and control group. All patients filled questionnaire about risk factors. Presence of angina pectoris, myocardial infarction (MI) or stroke was defined according to physician's diagnosis or patient's reported anamnesis.

Intima-media thickness (IMT) and presence of plaques in carotid arteries were assessed using 2D-mode vascular ultrasound. Presence of AMD were determined by systematic grading of stereoscopic color fundus photographs.

Results: AMD was diagnosed significantly more frequent in patients with angina pectoris, previous MI or stroke than in patients without CVD.

There were no statistically significant relation between AMD presence and overweight, alcohol consumption and other risk factors. The IMT of common carotid artery (CCA) was significantly higher in patients with AMD.

There were no statistically significant differences of IMT in CCA, carotid artery bifurcation (CAB) and internal carotid artery (ICA), end-diastolic and peak-systolic velocities.

Consumption of cardiovascular medications were not significantly different between pathologic and control groups.

Conclusion: We did not find any significant relation between AMD and investigated separate CVD risk factors, but AH was significantly more common in patients with AMD. CCA IMT was significantly higher in patients with AMD. If CCA IMT was >0.9 mm, the risk of AMD was increasing 8.22 times. Different classes of cardiovascular system affecting medications have not significant influence on AMD development in our study.

There is a need for further research of underlying biological processes explaining the relationship of carotid IMT and carotid plaques and the incidence of AMD.

EP-RET-634

Intravitreal sulfur hexafluoride injection for the treatment of vitreomacular traction (VMT) syndrome refractory to ocriplasmin

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Purpose: Vitreomacular traction (VMT) syndrome can cause symptomatic metamorphopsia and decreased visual acuity. Although it is typically treated with vitrectomy or intravitreal ocriplasmin injection, these procedures can be invasive and costly.

The purpose of this paper is to describe the efficacy of intravitreal sulfur hexafluoride injection for the treatment of VMT syndrome refractory to ocriplasmin.

Method: We describe the case of a 78-year-old diabetic patient with VMT refractory to ocriplasmin and visual acuity of 65 letters (ETDRS).

Results: After one month, we decided to administer, through the pars plana 4 mm posterior to the limbus with a 30-gauge needle on a 1-mL syringe, 0.3 mL of 100% SF₆ gas. We obtained a release of VMT at one month after the injection. The final visual acuity was 85 letters in the ETDRS scale.

Conclusion: intravitreal injection of expansile sulfur hexafluoride gas is a low-cost and minimally invasive alternative for the treatment of symptomatic VMT syndrome refractory to ocriplasmin

EP-RET-636

Inner retinal layer changes in patients with Age Related Macular Degeneration

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Purpose: To analyze and compare the changes in macular ganglion cell - inner plexiform layer (GCL+IPL) thickness in patients with a dry and wet form of AMD in order to evaluate the influence of AMD on inner retinal layers.

Method: Patients were divided into 3 groups: group I n= 100 patients with wet AMD, group II n= 95 patients with dry AMD and control group III n= 94 subjects without systemic or ocular diseases. The examination was performed using Cirrus SD-OCT. Average macular thickness was evaluated, as well as average and minimum GCL+IPL thickness and GCL+IPL thickness in all 6 sectors.

Results: Average GCL+IPL thickness in patients with wet AMD form was 43.13. µm, in patients with dry AMD it was 66.73 µm and in the control group 86.23 µm. Average GCL+IPL and minimum GCL+IPL thicknesses were significantly different between the groups (P<0.001) and were thinner in wet AMD (P<0.001) than in dry AMD group. In dry AMD group average GCL+IPL and minimum GCL+IPL thicknesses were statistically thinner than in healthy subjects (P<0.001).

Conclusion: AMD, either dry or wet form, is also accompanied by changes of inner macular layers in the form of GCL+IPL thinning. Patients with wet AMD have thinner GCL+IPL in comparison to patients with dry AMD.

EP-RET-639

Branch retinal artery occlusion (BRAO)

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Purpose: Clinical Case

Methods: Photographic & Imaging

Results: Diagnostic and treatment methods

Case history: Painless loss of monocular vision is the usual presenting symptom for BRAO, prognosis is poor, with only 21-3% of eyes retaining useful vision. Also BRAO is a harbinger for other systemic disease - especially hypertension disease.

A 65-year-old Caucasian consulted in our clinic because of blurred vision in his Right eye - for a month, left eye was injured several years ago by blunt trauma, and now he has - Phthisis Bulbi - OS. He also was consulted by cardiologist and was diagnosed - hypertension disease.

Examinations we did: VA: OD = 0.1 OS = 0 (By Snellen Chart)

BCVA: OD = 0.1

IOP OD = 16-17 mm.Hg

RAPD - Absent

Optical Media - OD - Cornea - transparent; Lens - mild cataract; Vitreous - clear.

Fundus Examination - OD: image

OD OCT: image

Differential diagnosis: First we thought that it was - edema, scar or may be tumor, as we have not got an angiography regimen in our OCT yet, we did B scan:

Finally, the examinations we have carried out on the patient led to the diagnosis - BRVO - Branch Retinal Artery Occlusion - with cilioretinal artery (are reported to be present in 50% of eyes).

Treatment plan: Observation.

Question: Do you agree with our diagnosis and treatment?

References: Handbook of Retinal OCT - JAY S. DUKER; NADIA K. WAHEED; DARIN R. GOLDMAN

Optical Coherence Tomography of Macular Disease and Glaucoma - 3rd addition - VISHALI GUPTA; AMOD GUPTA

Kanski's Clinical Ophthalmology: A Systemic Approach, 8th Edition

EP-RET-640

Implications of VEGF in aqueous humor of patients with proliferative and non proliferative diabetic retinopathy

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Purpose: To compare the concentration of VEGF in aqueous humor between patients with proliferative and non proliferative diabetic retinopathy.

Method Samples (0.1 - 0.2 ml) of aqueous humor were collected in sterile tubes by way of limbal anterior chamber puncture. Blood samples were also collected ELISA was used for the measurement of VEGF content in the aqueous and serum samples accordingly. Fasting blood glucose, HbA1c and ESR levels were also measured. The study was made under accordance of Ain Shams faculty of medicine IRRB rules for clinical and human involving research.

Results: Our study included 70 eyes. These were divided in 3 groups 25 patients for each of NPDR and PDR. 20 patients for the contro(Group C) which included non diabetic senile cataract patients. •Seven patients of group A(PDR)

had aqueous VEGF concentration above 226 pg (226-260 pg), those patients had cystoid macular edema. levels of aqueous and serum VEGF were significantly higher in group A than group B (NPDR). The levels of VEGF in aqueous and serum were not correlated in control group but showed a strong extremely significant positive correlation in retinopathy groups

Conclusion: Aqueous levels of VEGF were significantly elevated in eyes with PDR compared to normal eyes and also to NPDR without clinically significant diabetic macular edema. These results emphasize that VEGF elevation is induced by retinal ischemia This elevation also correlated with the severity of DR, with a moderate increase of VEGF in the NPDR with clinically significant DME

EP-RET-641

Clinical effect of Nepafenac 0,1% ophthalmic solution usage in combined treatment of acute central serous chorioretinopathy

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Purpose: To assess the efficacy of topical application of Nepafenac 0,1% ophthalmic solution in the combined treatment of acute form of central serous chorioretinopathy.

Method: The study comprised 25 patients (25 eyes) with acute form of central serous chorioretinopathy which received systemic acetazolamide, angioprotective, antioxidant and neuroprotective drugs. 11 patients (11 eyes) of main group additionally received instillation of 0,1% Nepafenac ophthalmic solution 2 times a day during 45 days. The efficacy criteria were visual acuity changes, mean central foveal thickness, and the portion of patients with complete resorption of subretinal fluid at 6 months of therapy. Ophthalmic examination including visual acuity testing, fundus examination with a 3-mirror Goldman lens, and mean foveal thickness measurement by optical coherence tomography (RTVue-100, Optovue, USA) was performed at baseline and at 6 months of therapy.

Results: In 6 months complete resorption of subretinal fluid was observed in 9 eyes (81,82%) of main group, and in 7 eyes (50,0%) in control group. Visual acuity in main group increased significantly from 0,29±0,12 to 0,8±0,17 (p<0,05), and from 0,27±0,13 to 0,5±0,11 in patients of control group. Mean foveal thickness in main group decreased significantly from 354±51 µm to 224±33 µm (p<0,05), and from 361±62 µm to 288±75 µm - in control group.

Conclusion: Our results suggest that combined treatment of acute form of central serous chorioretinopathy with systemic acetazolamide, angioprotective, antioxidant, neuroprotective drugs and nonsteroidal anti-inflammatory prodrug Nepafenac 0,1% ophthalmic solution was effective leading to significant visual acuity improvement, normalization of foveal thickness and complete resorption of subretinal fluid in most of the patients.

EP-RET-642

One year results of treatment with aflibercept for angiod streaks-related choroidal neovascularization after switching from ranibizumab

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Purpose: To report the 1-year results of treatment with aflibercept for angiod streaks-related choroidal neovascularization (AS-CNV) after switching from ranibizumab.

Method: Case report.

Results: A 42-year-old Caucasian female with pseudoxanthoma elasticum and bilateral angiod streaks (AS) had AS-CNV in left eye (OS) treated with 12 intravitreal injections (IVIs) of ranibizumab over a period of 13 months. Despite the intensive treatment with ranibizumab no significant functional or anatomic change was observed and best-corrected visual acuity (BCVA) remained stable at 3/10. One month after the last IVI of ranibizumab optical coherence tomography (OCT) revealed signs of subretinal fibrosis and active CNV with intraretinal fluid and cysts and a subtle accumulation of subretinal fluid. At that point switch of treatment from ranibizumab to aflibercept was

decided. The patient received the standard age related macular degeneration treatment regimen with aflibercept with a loading dose of three consecutive monthly IVIs of aflibercept followed by bimonthly administration of aflibercept. After the 3 loading doses of aflibercept BCVA improved to 6/10 OS while OCT demonstrated resolution of the subretinal fluid with reduction of the intraretinal fluid. After 12 months and 7 IVIs of aflibercept BCVA was reduced to 3/10 OS although OCT demonstrated further morphological improvement. **Conclusion:** The initial favorable response of our patient indicates that aflibercept might be an alternative management for advanced cases of refractory AS-CNV that responded insufficiently to prior ranibizumab injections. Prospective studies with a large cohort of patients are required to evaluate the effect of aflibercept on AS-CNV and to propose a standardized treatment protocol for this entity.

EP-RET-643

Analgesic effect of nepafenac 0.1% on intravitreal injections related pain

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Purpose: To evaluate the analgesic effect of nepafenac 0.1%, a topical administered non-steroidal anti-inflammatory agent, in patients undergoing treatment with intravitreal injections (IVIs) of anti-vascular endothelial growth factors.

Method: A single center, prospective, randomized, blinded, placebo-controlled, crossover interventional study involving patients scheduled to undergo IVI of anti-vascular endothelial growth factors. Patients were randomized in a 1:1 ratio to receive topically nepafenac or placebo on subsequent IVIs. Using the short form of the McGill Pain Questionnaire (SF-MPQ) pain intensity was assessed with the Visual Analogue Scale (VAS), the Main Component of the SF-MPQ and the Present Pain Intensity (PPI) scores immediately and 6 hours post-injection.

Results: The VAS pain score was statistically significant lower immediately and 6-hours post-IVI in patients treated with nepafenac ($p=0.001$ and < 0.001 respectively). The Main Component of the SF-MPQ scores were also statistically significant lower after nepafenac administration at both time points ($p < 0.001$). Finally, the PPI score was statistically significant lower when nepafenac was instilled before IVI ($p=0.015$ immediately and $p < 0.001$ at 6 hours post-injection).

Conclusion: A single instillation of nepafenac 0.1% could effectively alleviate the IVI-related pain during the immediate period and at the first 6 hours post-injection.

EP-RET-644

Long-term follow up of central serous chorioretinopathy treated with PDT: features of multimodal imaging and OCT angiography

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Purpose: ICGA-guided PDT has been considered as a promising therapy for CSC patient and leads to anatomic and functional improvement. Abnormal choroidal hyperpermeability on ICGA is generally accepted as the primary

pathogenic mechanism of CSC. This study aimed to observe the whether the feature of Multimodal Imaging, especially OCT angiography, were related with the clinical outcome after PDT in CSC patients.

Method: chorionic or persistent CSC cases (>4 months) treated with ICGA-guided PDT were involve in this study. Multimodal imaging, including OCT angiography, fundus photography, autofluorescence, FFA and ICGA, were used before and after PDT (6 to 12 months).

Results: Half-dose PDT guided by ICGA was performed in 28 eyes of 26 patients in this study. Patients were followed up at least 6 months. The incidence of focal choroidal hyperpermeability was 89.3%. Features of OCT angiography before PDT included serous retinal detachment (28/28), PED (8/28), focal choroidal excavation (1/28) and abnormal choroid cavitation (3/28). Double layer sign, irregular PEDs with hyper-reflective content overlying an intact thin hyper-reflective layer, was found in 64.3% (18/28) cases before PDT. OCT angiography showed dilation and irregular capillary on outer retinal layer. Increased thickness of choroid with diffuse dilation of choriocapillaris was observed by OCT angiography. After PDT, improvement of BCVA with absorption of subretinal fluid was observed in 57.1% (16/28) cases. Persistent occur of subretinal fluid was observed in 42.9% (12/28) patients during follow up. Double layer sign were observed in 100% (12/12) of treatment-insensitive chronic CSC eyes versus 37.5% (6/16) of treatment-sensitive CSC eyes.

Conclusion: Double layer sign is found related with the prognosis of chronic CSC in this study. CSC with double layer sign may response less to PDT. OCT angiography may become a valuable tool for treatment and follow up of CSC.

EP-RET-645

A retrospective study of the real-life effectiveness of aflibercept therapy for neovascular age-related macular degeneration. 1 year results

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Purpose: To investigate neovascular AMD (nAMD) one year treatment effectiveness of aflibercept intravitreal injections (IVA) in routine, real-life setting.

Method: We conducted retrospective study in Eye Clinic of LUHS Kauno Klinikos and in Vilnius University, Clinic of Ear, Nose, Throat, and Eye Diseases, Centre of Eye Diseases. Patients who had nAMD and persistent activity on SD-OCT were treated with IVA injections. At baseline each patient underwent best corrected visual acuity (BCVA) assessment on Snellen chart and SD-OCT. After the first IVA, each patient was followed-up for 12-month. **Results:** We analysed 170 eyes of 160 patients with nAMD. One year treatment with aflibercept revealed a minor improvement in BCVA (0.40 vs 0.44 Snellen chart) and in the central retinal thickness (CRT) (330.4 vs 270.8) ($p < 0.01$). Pre- and post-treatment BCVA correlation was significant $r=0.67$ ($p < 0.01$) and CRT correlation was weak $r= 0.3$ ($p < 0.01$). Mean number of IVA was 4.89 ± 1.8 .

After one year: in 58 (34.1%) eyes BCVA worsened, mean CRT in this group was 280.2 and mean number of IVA was 4.79; in 38 (22.4%) eyes BCVA didn't change, mean CRT was 263.0 and mean number of IVA was 5; in 74 (43.5%) eyes BCVA improved comparing with BCVA before first IVA, mean CRT was 267.4 and mean number of IVA was 4.91. BCVA or CRT after one year and the number of IVA didn't show any correlation $r=0.2$ (BCVA), $r=0.09$ (CRT).

Conclusion: nAMD treatment with IVA is effective in stopping deterioration of BCVA (77.3%) and in decreasing CRT (75.3%). Analysis showed that patients with better BCVA have more chances to maintain better vision after IVA treatment. Number of IVA does not conclude in better vision.

EP-RET-647

The effect of anti-VEGF injection on central macula and choroidal thickness in neovascular type age-related macular degeneration*Isik P., Sizmaz S., Esen E., Demircan N.**Çukurova University, Ophthalmology, Adana, Turkey*

Purpose: To evaluate and to compare the effect of different anti-VEGF agents on central macular thickness (CMT) and subfoveal choroidal thickness (SCT) in neovascular type age-related macular degeneration (nAMD).

Method: Treatment-naïve nAMD patients who received three monthly injections of either aflibercept or ranibizumab were enrolled. In patients with bilateral disease, eyes with low visual acuity were included. All patients underwent full ophthalmic examination and spectral domain optical coherence tomography scanning at each visit. Ranibizumab and aflibercept were compared by means of CMT and SCT changes. The effect of the lens status and type of lesion on CMT and SCT were also evaluated.

Results: There were 25 patients in the aflibercept group and 16 patients in the ranibizumab group. There was no significant difference between the two groups with respect to age and gender ($p=0.891$ and $p=0.732$, respectively). At the initial, 1st, 2nd, and 3rd month visits, CMT and SCT measures were 449.2 ± 145.8 , 367.0 ± 111.7 , 338.4 ± 101.5 , 332.7 ± 110.7 ; 245.7 ± 78.8 , 230.2 ± 69.9 , 216.2 ± 77.1 , 222.8 ± 70.9 ($p<0.001$ and $p=0.049$, respectively) in the aflibercept group and 442.2 ± 110.9 , 338.9 ± 42.0 , 321.4 ± 45.9 , 319.5 ± 45.2 ; 220.5 ± 72.8 , 216.7 ± 84.2 , 205.1 ± 70.6 , 203.3 ± 70.3 ($p<0.001$ and $p=0.185$, respectively) in the ranibizumab group. There was no significant effect of lens status on CMT and SMT ($p=0.362$ and $p=0.625$, respectively). While the decrease in CMT in occult CNV was higher than predominantly classic and minimally classic lesions ($p=0.017$); change in SCT was not found to significantly differ due to lesion types ($p=0.110$).

Conclusion: Although this study was limited with the retrospective nature, small sample size, and the lack of visual acuity evaluation, there was no significant difference on CMT and SCT between the effect of the two drugs used most commonly in the treatment of n-AMD, a leading cause of irreversible blindness all the world.

EP-RET-648

Clusters protrombine genetic phenotype receptors in patients with platelet unproliferative diabetic retinopathy*Petrenko O., Gudj A., Rukov S., Maksimtsev M., Petrenko O., Barinov E.**Shupik National Medical Academy, Kiev, Ukraine*

Purpose: The mechanisms platelet genesis with the progression of unproliferative diabetic retinopathy.

Method: Studies were prospective in nature and included 31 patients (31 eyes) with diabetes mellitus (DM) type 2, which detected light (19 patients) and mild (12 patients) phase unproliferative diabetic retinopathy (classification ETDRS). Platelets (TN) were isolated by centrifugation of citrate peripheral blood of patients. To activate TN agonists used, involved in the pathogenesis of diabetes: ADP, epinephrine, angiotensin-2 (AT-2), platelet activating factor (PAF), collagen. TN aggregation Assessment conducted on model 700 aggregometer (Chrono-Log Corporation; USA).

Results: Patients found hyperreactivity TN, which is typical for protrombine phenotype. In mild stages of diabetic retinopathy revealed two major clusters of receptors TN, which coincide to the highest α_2 -adrenergic activity and AT-2 receptors, but differed TN reaction to collagen. In cluster A regarding reactiv-

ity TN collagen exceeded that in the cluster to $24,1\%$ ($67,0 \pm 1,9\%$ vs $54,0 \pm 1,1\%$; $p < 0.001$). TN reaction to epinephrine, AT-2, PAF and ADF in clusters did not differ statistically significant ($p > 0.05$). In moderate stages of diabetic retinopathy are two other cluster (C and D) receptors. For typical cluster C increase reactivity when exposed TN AT-2 ($70,0 \pm 1,0\%$ vs $59,0 \pm 1,9\%$; $57,5 \pm 1,8\%$; $54,5 \pm 1,5\%$ respectively clusters A, B and D; $r < 0,05$); TN response to PAF, collagen and ADF was less than that in epinephrine and AT-2 ($r < 0,05$). Cluster D shows the highest response in TN FAT than in clusters A, B and C (respectively $64,0 \pm 1,3\%$ vs $52,0 \pm 1,2\%$; $53,5 \pm 1,9\%$; and $56,0 \pm 1,3\%$; $r < 0,05$). Compared to cluster D sensibilisation of AT-2 receptors was by 29.6% more ($r < 0,05$).

Conclusion: Definition protrombine phenotype and clusters of functionally active receptors TN opens to assess the impact pathogenetic factors of type 2 diabetes to determine the factors of progression of diabetic retinopathy.

EP-RET-649

Bilateral occlusion of the central vein of the retina disclosing Waldenström's disease*Menif M., Kammoun S., Abid F., Kilani W., Ben Amor S., Feki J. CHU Habib Bourguiba, Sfax, Tunisia*

Purpose: To report a case of Waldenström's macroglobulinemia (WM) revealed by bilateral simultaneous central retinal vein occlusion (CRVO) with macular edema and serous macular detachment (SMD).

Method: A single case report.

Results: A 60 year old man presented to our department complaining of bilateral blurred vision since two weeks associated with asthenia and vertigo. The best corrected visual acuity was 5/10 P4 in both eyes. Fundus examination (FE) of both eyes revealed retinal hemorrhages in all quadrants, peripheral microaneurysms, dilation and tortuosity of retinal veins. Spectral domain optical coherence tomography (SD-OCT) showed bilaterally extensive cystoid macular oedema with SMD. Serum protein electrophoresis showed an M-spike in the gamma region. Bone marrow trephine biopsy confirmed the diagnosis of WM. The patient was treated with plasmapheresis and subsequent chemotherapy. Six months after the systemic therapy, visual acuity improved in the right eye to 10/10 P2 and to 9/10 P2 in the left eye. FE of both eyes revealed almost complete resolution of hemorrhages. SD-OCT showed in both eyes disappearance of SMD, good foveal depression but persistent perifoveal cystoid spaces.

Conclusion: In any case of bilateral CRVO, hyperviscosity and WM should be suspected. The basic treatment is plasmapheresis and chemotherapy. Research is needed for the other treatments, especially intravitreal injections of bevacizumab.

EP-RET-650

Surgical outcome after removal of epiretinal membranes classified into different OCT-based morphological groups*Hari-Kovacs A., Gyetvai T., Soos J., Vereb Z., Facsko A. University of Szeged, Dept of Ophthalmology, Szeged, Hungary*

Purpose: To investigate the anatomical and functional changes after the removal of epiretinal membranes classified into different, OCT-based morphological groups.

Method: Retrospectiv study of the patients underwent ERM removal at the Department of Ophthalmology of the University of Szeged between 2012 January and 2016 July. Surgeries were done by the same surgeon, by 23 pars plana vitrectomy using OcuBleu Plus vital stain to make ERM more visible.

According to the preoperative spectral domain OCT B-scans, the patients were divided into 3 groups. In P-group the ERM did not attached on the fovea leading to pseudohole formation with or without splitting of the retinal layers. ERM attached forms were divided to I-, and O-groups according to whether retinal thickening predominantly involved the inner or outer layers, respectively. The primary endpoints of the investigation were best corrected visual acuity (BCVA) and central retinal thickness (CRT).

Results: The average age did not differ between the groups, it was 68,3, 70,4 and 66,8 years in I-, O- and P-groups, respectively. The follow-up time varied between 2 and 38 months (mean 10 months). The mean BCVA improved from 0,33, 0,39, 0,39, to 0,50, 0,68, 0,73 following the surgery; the mean of CRT decreased from 483, 502, 280 microns to 381, 421 and 231 microns in the I-, O-, and P-groups, respectively. The average BCVA improvement was the highest in the P-group (0,34).

Conclusion: The proposed OCT-based morphological ERM classification also seems to mirror both pre- and postoperative retinal function, such may have an important role in the prediction of the surgical outcome of ERM peeling. Most favourable results can be expected in fovea sparing ERM cases (P-group).

EP-RET-651

Bilateral vitelliform macular dystrophy in a patient with beta-thalassemia

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Purpose: To report a case of bilateral vitelliform-like macular dystrophy in a transfusion dependent patient undergoing deferoxamine chelation therapy for beta-thalassemia intermedia.

Method: Case report

Results: A 58 year old woman suffering from beta-thalassemia intermedia and undergoing blood transfusions and iron-chelation therapy with subcutaneous deferoxamine presented to our outpatient complaining of blurred vision and metamorphopsia in both eyes (OU) for the past 4 months. On examination, the best corrected visual acuity was 8/10 in right eye and 9/10 in left eye. Fundoscopy revealed yellowish material at the level of the retinal pigment epithelium surrounded by irregular pigmentation in the area of the macula and angioid streaks arising from the optic disc, not involving the macula OU. Fundus autofluorescence showed subtle stippling while in fluorescein angiography central staining OU was observed. Spectral domain optical coherence tomography revealed hyperreflective subfoveal deposit located in the subretinal space OU. No abnormal cone and rod responses were recognised in the full field electroretinogram.

Conclusion: Retinal pigment epithelium changes are common in patients treated with deferoxamine. Amongst them, pattern dystrophies such as vitelliform-like macular lesions may rarely develop in this particular group of patients.

EP-RET-652

Morning glory syndrome and retinal detachment

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Purpose: To study the possibility of treatment the patients in cases with morning glory syndrome and retinal detachment.

Method: There were analyzed 3 cases with morning glory syndrome and retinal detachment. In two cases morning glory syndrome was complicated with macular detachment and in one case the rhegmatogenous retinal detachment with peripheral retinal break was observed. In two cases with macular detachment it was managed by intravitreal injection of 0.8 mL of pure perfluoropropane followed by face down position for 2 weeks. In the case with rhegmatogenous retinal detachment standard three-port vitrectomy with air-fluid exchange, endolaser and gas perfluoropropane tamponade was performed.

Results: In the cases with macular detachment treated with intravitreal gas injection we observed the noticeable flattening of RD in macular area with visual improvement after 1 month. After 3 months this process was continuing with some increase of VA and decrease of RD. After 2 years the retina was almost attached in 1 case. In other one the follow up period made up 1 year and we observed significant flattening of retina in posterior pole. In the case with rhegmatogenous retinal detachment managed with standard three-port vitrectomy retina was attached on the follow up period of 2 years till now with visual improvement.

Conclusion: Despite the small case series because of very rare pathology it was shown that intravitreal gas injection can be the choice of treatment in morning glory syndrome complicated with macular detachment.

EP-RET-653

Complications of retinopathy of prematurity in adults - a case report and literature review

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Purpose: The aim of the study is to analyze a case of a 25-year old patient with retinopathy of prematurity (ROP) and to present the intraocular changes, difficulties in the treatment as well as complications during surgical procedures. Due to progress in neonatal care the number of surviving premature babies is increasing the number of adults with ROP.

Case description: An infant was born in the 25th week of gestation with a birth weight of 1000 grams. After birth the patient was admitted to an intensive care unit and given oxygen therapy. Inactive scarring stage of ROP was diagnosed so the invasive treatment was not applied. Despite pharmacotherapy the fibroplasia progression was observed. Over time right eyeball became atrophic while in the left eyeball synechia, iris rubeosis, trabecular constriction and the phacomorphic cataract reduced the outflow of aqueous humor and intensified glaucoma changes. At the age of 24 the diode laser transscleral cyclophotocoagulation of the left eye was performed because of constantly persisting elevated intraocular pressure (IOP).

One year later due to cataract progression, weakening of visual acuity and unstable IOP the decision of phacoemulsification has been made. The surgery was challenging: there were difficulties in incising the cornea; poor visuality because of corneal edema, bleeding (from rubeosis iridis), retinal folds and vitreoretinal proliferations; insufficient dilatation of pupil; the high risk of lens luxation due to weak zonules. Despite of many impediments the surgery was successful. Currently the patient is under constant ophthalmological control.

Conclusion: The serious ophthalmological consequences of ROP in adulthood such as cataract formation, glaucoma, corneal opacification, retinal tears and detachments, microphthalmos or high myopia are making the treatment of this group of patients difficult. Surgical procedures are often demanding due to specific eye anatomy and plenty of intra-operative complications.

EP-RET-654

Damage of the retina with a laser pointer

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Purpose: Laserové beam appears to be safe only in specific determined conditions, but for the eye can be dangerous in any case.

Method: SD-OCT prospective study in 2 eyes of 2 patients after retinal laser damage.

Results: Case report 1: In the year 2013 a 11 years old boy, studied a laser pointer of his father (red laser 560nm pointer of chinese production, output 100mW). He located its beam directed into his right eye for some seconds. After one month the boy passed through an ophthalmological examination. BCVA of the right eye (RE) was only 0,32, while left eye reached of expected 1,0. Changes in the macula region were revealed by ophthalmoscopy and specified by SD-OCT. Only fine changes were recognized by ophthalmoscopy one month after retinal damage. Punctual total destructions of the retinal layers between external limiting membrane and Bruch's membrane were found by SD-OCT. The expressiveness of the retinal changes was increased by the time. The loss of VA of the RE was fixed.

Case report 2: One 20year old university student was assault during daylight by one short flash of green laser of about 500-1000mW. Visual acuity was unchanged but 1/2PD outside fovea punctual total destruction of all retinal layers was observed and very expressively recognized by SD-OCT. There was no decrease of VA in time.

Conclusion: High speed expansion of laser technology in the last 10 years allowed construction of small laser emitors with output of more than 500mW. Such equipment belongs to the class IV of standard laser safety. The strongest apparatus on the market is Twin Diode 445nm laser, power of 3500mW. Such equipment is not only a toy but very strong weapon with skin damage effects and effect of permanent blindness for long distance. Prevention of the retinal damage in the general public has to be organized by wide education of adults and creation of new laws.

EP-RET-655

Coats-like retinitis pigmentosa - a case report

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Purpose: To present a case with bilateral retinitis pigmentosa (RP) associated with peripheral vasoproliferative tumors and Coats'-like retinal exudation.

Method: Patient underwent complete ophthalmological examination, visual field testing, fluorescein angiography and OCT. Additional systemic examinations included: complete blood count, standard biochemistry, serology for HSV, VZV, CMV and HIV.

Results: In January 2016, a 24 year-old male patient was examined due to bilateral visual deterioration and pain in the left eye. Patient had visual symptoms since childhood. Visual acuity in the right eye was 20/40, and left

20/400. Intraocular pressure was within limits in both eyes. Anterior segment findings were unremarkable. On both eye fundi, circumferential peripheral atypical bone spicule pigmentations and in inferior parts peripheral vasoproliferative tumors with subretinal exudation were seen. Visual field testing revealed generalized reduction in sensitivity with preserved central fields. In fluorescein angiography, bilateral vascular leakage from abnormal blood vessels in inferior retina and accompanying exudative retinal detachments were seen. Also, in both maculas early hyperfluorescence with late cystoid macular edema formation (predominantly in the left eye) were noted and confirmed using OCT. Biochemical analyses and serology were unremarkable. Patient was treated with per oral Acetazolamide (250 mg twice a day), and posterior subtenon Triamcinolone acetonide injections for the left eye. After treatment macular edema resolved in both eyes and visual acuity improved in right eye to 20/30, and left 20/100.

Conclusion: Bilateral Coats-like retinitis pigmentosa is a rare form of RP, which can lead to severe visual impairment. Complications are often present and include cystoid macular edema, cataract, retinal detachment and glaucoma. Therefore, regular patients' monitoring is mandatory.

EP-RET-656

Severe and rapid bilateral visual impairment: new mutations in progressive cone dystrophy

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Purpose: We aim to report a case of a 15 year-old patient with severe and rapid bilateral visual impairment due to progressive cone dystrophy and describe the associated mutations.

Method: This is a case report of a patient with a rare disease who underwent full ophthalmologic evaluations including optical coherence tomography (OCT) of the posterior pole, fundus autofluorescence (FAF) and electroretinography (ERG).

Results: A 15-year-old girl was presented at our Department with progressive vision loss and poor colour vision complaints. The patient reported these complaints for a year, despite a full uneventful ophthalmic evaluation at that time. Best-corrected visual acuity was 6/60 for each eye and Ishihara 24-plates colour test was altered. Fundoscopic evaluation showed a maculopathy with spotty pigment changes in addition to temporal pallor of the optic disk. Posterior pole OCT showed a reduced outer nuclear layer and retinal pigment epithelium unspecific changes. FAF revealed a central dark area surrounded by a ring of increased autofluorescence. ERG was inconclusive due to poor collaboration, although it was hypothesised to have a slight cone dysfunction. Moreover, genetic analyses of ABCA4 and CDHR1 genes were found to be positive for multiple mutations. The c.6816 + 2T>A (p.Leu2035Pro) mutation was never described and the c.6104T>C Citation tools (p.Leu2035Pro) mutation was only present in one patient with Stargardt disease. After a period of 2 years of follow-up visual function and retinal disease remained stable.

Conclusion: Progressive cone dystrophy is a rare inherited ocular disorder characterized by the loss of cone cells. This case report emphasizes the need to reach a clear diagnosis when uncommon symptoms appear in an otherwise normal ophthalmic evaluation and also describe newer mutations in ABCA4 gene enhancing our knowledge about this disease.

EP-RET-657

Macular vascular flow area and vascular density in superficial, deep and outer retina using optical coherence tomography angiography

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Purpose: To analyze macular vascular flow area and density, in healthy population, using OCT angiography (OCT-A)

Method: Transversal study. Defined exclusion criteria were: ocular pathology, previous ocular surgery and a spheric equivalent superior to +/- 5 diopters. All tomographies were taken by the same operator using the OCT-A Nidek Advance-OCT® (Nidek, Aichi, Japan). A 3x3 mm fovea centered scan protocol was used in: superficial capilar plexus, deep capilar plexus and deep retina plexus. Macular vascular flow area and density were automated calculated using the Nidek Advance-OCT® software.

Results: We analyze 18 patients (36 eyes), with a 41.58% male and a 61.42% female composition. Mean age was 48.21 +/- 10.76 (range 33-65) years old and a spherical equivalent was 0.59 +/- 1.9 diopters. Vascular plexus flow area were from superficial to external retina: 2.05 +/- 0.15 mm² CI95% (1.99-2.08); 3.27 +/- 0.24 mm² CI95% (3.19-3.34) and 3.56 +/- 0.14 mm² CI95% (3.51-3.6). Vascular plexus flow density were from superficial to external retina: 17.21 +/- 3.09% CI95% (16.23-18.12); 34.8 +/- 5.28% CI95% (33.13-36.46) and 32.98 +/- 3.46 CI95% (31.88-34.07)

Conclusion: We can state a normative data for vascular density for Nidek OCT-A system. All automated measurements values in OCT-A systems should be considered related the OCT-A system we are using for.

EP-RET-658

Three years real-life experience of ranibizumab therapy for neovascular age-related macular degeneration

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Purpose: To evaluate ranibizumab three years therapy in real-life clinical setting in patients with neovascular age-related macular degeneration (nAMD).

Method: Analysis of patients medical records with nAMD, who started ranibizumab treatment in 2012 were treated/or monitored till 2015 in Eye Clinic of LUHS Kauno Klinikos. Each patient underwent best corrected visual acuity (BCVA) assessment on Snellen Chart and measurement of central retinal thickness (CRT) with SD-OCT. Treatment was used as needed (PRN).

Results: Retrospectively we analysed 130 patients who received more than one ranibizumab injection. Over three years a mean number of injection was 5,27±3,97. In the first year a mean number of injections was 3,63±1,51. In the second year 49 patients received 2,67±1,84 and in the third year 26 patients received 3,19±1,84. During three years treatment was discontinued for 104(80%) patients due to: 46(35,4%) disease activity absence, 44(33,8%) macular scarring, 14(10,8%) failure to appear for observation. Baseline BCVA was 0,33±21. After first year of treatment mean of BCVA was 0,35±0,23, after second and third years BCVA mean was 0,34±0,24. Vision improved for 56(43%) patients after first year and after second for 53(40,8%) and it remained the same in the last year. BCVA was stable for 25(19%) patients after first year, for 21(16%) after second and third year. Most significant BCVA changes achieved after second injection (0,34 vs 0,36)(*P*< 0.05), afterwards no major changes observed. CRT significantly decreased after first and second injection (323,28 vs 236,08; 237,38)(*P*< 0.00).

Conclusion: Mean number of injections compared to other clinical trials was significantly lower, but in our study ranibizumab was effective and helped to stabilize BCVA. After three years treatment 20% of patients still needed to continue treatment. Best results in BCVA and CRT were after first and second injections, afterwards the BCVA and CRT stabilized and no major changes were observed.

EP-RET-659

Posterior segment pathological findings in pseudoexfoliation syndrome

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Purpose: To analyze the changes in the posterior segment of the eye with pseudoexfoliation syndrome (PXS), as well as to evaluate the biometric data and interrelation with pathological findings in eyes with PXS.

Results: In this retrospective study prevalence of pseudoexfoliative syndrome was 2.7 % (244 persons). The average age of patients was 63.4 years. In the eyes with PXS posterior vitreous detachment was diagnosed in 109 eyes (67.7 %). These findings were detected and confirmed by B-scan and optical coherence tomography. In 89 (81.7 %) cases of these eyes an epiretinal fibroplasia was found.

These findings were significantly greater than in the control group (526 persons without signs of PES, comparable in age, sex and refraction), where posterior vitreous detachment was observed in 53.2 % of the eyes, and only in 32.4 % of which the development of epiretinal fibrosis was observed.

In a further study were included 30 cases of patients aged from 60 to 80 years, with a symmetrical axial length of the eyes, with PXS on one of the eyes. 10 of this patients had posterior vitreous detachment with epiretinal fibroplasia, 10 of them had vitreous detachment without PXS and in 10 patients only PXS was diagnosed. Optical biometry parameters of the eyes were retrospectively analyzed. In accordance with the analyzed data presence of PXS syndrome has been associated with the increased lens thickness. Posterior vitreous detachment was accompanied by increased anterior chamber depth. The links between the presence of epiretinal membranes and biometric parameters were not observed.

Conclusion: PXS is not only the anterior segment pathology, but vitreous and retina also. In the posterior segment of the eye supposedly target structures are vitreous fibers and inner limiting membrane. In addition there is a definite relationship between the pathology of the anterior and posterior segments of the eye with PXS and it will need to be clarified with further detailed research.

EP-RET-660

Radiation retinopathy, the importance of clinical history in differential diagnosis

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Purpose: Radiation retinopathy (RR) is a predictable and often dose-dependent complication following exposure to radiation. The differential diagnosis between RR and diabetic retinopathy (DR) is not always straight-forward and they may coexist. Diabetes, as well as collagen vascular disease, hypertension, previous chemotherapy, and pregnancy, are associated with an increased risk of RR at lower doses, which may further complicate the diagnosis. Treatment options are limited but the mainstay includes laser treatment and intravitreal injections. The purpose of this paper is to describe a clinical case in order to bring attention to a frequently misdiagnosed pathology.

Method: The authors present a case of a 52-year-old patient referred to the DR consult after standard photographic screening portrayed what appeared to be severe non-proliferative DR. He had been subjected to cerebral radiotherapy due to brain metastasis from a lung primary neoplasm. The BCVA was 6/7.5 with OD and finger counting with OS. The anterior segment had no alterations. Funduscopic examination exhibited multiple microaneurysms and haemorrhages, dispersed hard exudates and cotton-wool spots with macular oedema. SD-OCT revealed central macular thickness of 605µm in OD and 441µm in OS. Fluorescein Angiography revealed both extensive central and peripheral ischaemia. Following these results, intravitreal bevacizumab 1.25mg/0.05mL injection was administered in each eye and laser treatment was scheduled.

Results: After the injections, SD-OCT revealed a significant decrease in macular thickness of 307µm OD and 148µm OS, and only BCVA OS improved, to 6/48.

Conclusion: Quite often a patient with RR is mistakenly referred to the DR consult due to their clinical and histopathological similarities. The key to this differential diagnosis is in correct history taking, which in the diabetic patient may be the only clue to this pathology. Treatment has been based on established therapy for DR with variable results.

EP-RET-661

Pigmented paravenous retinochoroidal atrophy associated with unilateral cystoid macular edema

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Purpose: To report a case of pigmented paravenous retinochoroidal atrophy (PPRCA) associated with unilateral cystoid macular edema.

Method: A 65-year-old male was referred to our Department of Ophthalmology with complaints of worsening visual acuity in the left eye (OS). We performed fundus examination, fluorescein angiography (FA), visual field examination and optical coherence tomography (OCT).

Results: The patient had a best corrected visual acuity of 6/10 in the right eye (OD) and 3/10 in the OS. No alterations were observed in the anterior segment and there were no signs of intraocular inflammation in both eyes. Both fundi revealed areas of retinochoroidal atrophy along the retinal veins and bone spicule pigmentation was observed along the nasal and superior temporal venous branches as well as macular edema in the OS. FA showed hyperfluorescence consistent with retinal pigment epithelium (RPE) degeneration in both eyes, with more extensive areas of choriocapillaris atrophy and blocked fluorescence in the pigment accumulation areas in the OS. OCT demonstrated cystoid macular edema in the OS. Visual field examination showed a ring scotoma in both eyes, corresponding to the areas of atrophy, with preservation of central fixation. The patient underwent 3 intravitreal injections of bevacizumab in the OS, with a slight improvement in visual acuity to 4/10 and in the macular edema thickness.

Conclusion: PPRCA is a rare disease of unknown etiology, characterized by RPE and choroidal atrophy, associated with bone spicule pigment deposition along the retinal veins, usually in a bilateral and symmetric way. Patients are usually asymptomatic, often diagnosed during a routine examination, as the disease tends to be slowly progressive, with good visual prognosis, with the exception of rare macular involvement. We present an unusual case with asymmetric ocular involvement and unilateral cystoid edema, with poor anatomical and visual response to antiangiogenic treatment.

EP-RET-662

Isolated cotton wool spots

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Purpose: Cotton wool spots are believed to occur secondary to ischemia from retinal arteriole obstruction with focal interruption of axoplasmic flow in the nerve fibre layer. They may be observed in several retinopathies including diabetic and hypertensive retinopathy, HIV microangiopathy, coagulopathies and leukemia. A single cotton wool spot may be the earliest ophthalmic sign of a systemic disease and warrants a thorough etiologic investigation since in over 96% of the cases a disease will be diagnosed. However, isolated symptomatic cotton wool spots in otherwise healthy young individuals have been reported.

Method: The authors describe two cases of isolated single cotton wool spots in two young previously healthy adults presenting with sudden unilateral scotoma. Both patients were submitted to a comprehensive clinical evaluation including review of systems, complete ocular examination, blood pressure measurements, blood work, echocardiography, carotid Doppler ultrasound, computerized static perimetry, spectral domain OCT, OCT angiography and fluorescein angiography.

Results: In both cases blood pressure, fasting glucose and haematological parameters were normal. Serological tests for HIV, HBV, HCV, toxoplasmosis and syphilis were negative. Antinuclear, lupus anticoagulant and antiphospholipid antibodies and rheumatoid factor were normal. Echocardiography and carotid Doppler ultrasound were normal. Complete ocular examination did not reveal any abnormalities beside the isolated cotton wool spot. OCTA was particularly useful revealing a normal superficial and deep capillary network. Both patients improved visually after 6 weeks with the cotton wool spot remaining visible in one patient after 3 months.

Conclusion: Isolated single cotton wool spots may be observed in healthy individuals. They may be overlooked and underdiagnosed due to their subtle symptoms. However, considering its strong association with systemic diseases further investigation is mandatory.

EP-RET-663

The use of LUCENTIS® (ranibizumab) intravitreal injection for the treatment of macular oedema secondary to diabetic macular oedema (DME)

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Purpose: to assess compliance with NICE guideline TA274 Ranibizumab intravitreal injection for the treatment of macular oedema secondary to diabetic macular oedema (DME) in the selected cases.

Method: This was a Retrospective study that involved collecting data from the medical notes, observing the pre-operative and post-operative VA (before and after the injection of Lucentis), the number of injections and the change of intraocular pressure (IOP) after the injections. Fifty eyes that underwent LUCENTIS® Ranibizumab intravitreal injection for Diabetic macular oedema between July 2014 and Jun 2015 were observed. The OCT results were observed from the system evaluating the thickness of central fovea (TCS) and average thickness (TAC) before and after the injections.

Results: The visual acuity improved up to 3 lines in the log mar chart in 26 eyes. 21 eyes showed no changes. 3 eyes continued to deteriorate showing reduced VA after the injections. The two-tailed P value equals 0.0008. By conventional criteria, this difference is considered to be extremely statistically significant. Taking into account the criteria of NICE published guideline

for the patients receiving Ranibizumab for Diabetic macular oedema, the central retina should be above a certain thickness (400 micrometres or more) when treatment is started. Our results show 100% compliance with NICE criteria. Results of the TAC before and after the injections showed the two-tailed P value equals 0.0002. By conventional criteria, this difference is considered to be extremely statistically significant.

Conclusion: Our cohort of patients showed 100 % compliance with NICE criteria. The use of Lucentis in DMO improved visual acuity and reduced the central macular oedema seen on Optical Coherence Tomography.

EP-RET-664

Complicated choroidal osteoma: a report of 4 cases

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Purpose: To report four cases of complicated choroidal osteoma.

Methods: Four case reports. Detailed ophthalmic examination, fluorescein angiography (FA) and B-scan sonography were performed in all cases.

Results: Four young patients presented with unilateral visual loss. They had no history of systemic or ocular disease. Fundus examination showed a peripapillary choroidal osteoma associated with serous retinal detachment (SRD) extending to the macula with no obvious features of choroidal neovascularization (CNV) in these 3 cases. In the fourth patient, multimodal imaging findings were consistent with a macular choroidal osteoma associated with CNV. SRD was managed with transpupillary thermotherapy in 1 patient and intravitreal bevacizumab in the two other patients, resulting in a total resolution of the subretinal fluid and subsequent improvement of visual acuity in these 3 cases. The fourth patient was successfully treated with an intravitreal injection of aflibercept. Anatomic and functional outcomes remained stable at the last follow-up.

Conclusions: Choroidal osteoma is a rare ossifying tumor of the choroid. It is often asymptomatic and the diagnosis is generally based on characteristic clinical appearance and ocular B-scan sonography. Choroidal osteoma may be complicated by CNV or isolated SRD, which can be successfully managed with transpupillary thermotherapy or intravitreal anti-VEGF injections.

EP-RET-665

Progressive retinoschisis in a young patient with pars planitis

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Purpose: Describe a rare case of a young patient with pars planitis and progressive retinoschisis.

Method: Patient case control

Results: 11 years old male child followed in the uveitis department due to bilateral pars planitis since he was 7 years old. All systemic investigations including infectious and autoimmune etiologies were negative. Despite being immunosuppressed with methotrexate and prednisolone 5mg/day the patient had 3 recurrences of pars planitis with macular and disk edema in three years. In the last episode, an inferior retinoschisis was detected with traction of the

retinal vessels to the snowbank. Optical coherence tomography and ultrasound was performed which revealed a small pigment epithelial detachment. The systemic doses of prednisolone were increased and the patient was started on cyclosporine. Regardless of the treatment the schisis progressed towards the posterior pole and ultimately involved the fovea. Visual acuity was 1/10 in the affected eye. The patient was proposed for a pars plana vitrectomy with scleral buckle.

Conclusion: Patients with pars planitis may develop retinoschisis which may require surgical intervention. A careful examination of these patients, especially of the lower retinal quadrants is extremely important to detect and follow up this potentially sight threatening complication.

EP-RET-666

Epidemiology of the photocoagulation and vitrectomy in the Czech Republic in diabetic population treated with insulin pumps

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Purpose: Insulin pump treatment (IP) is one of the ways of intensive insulin therapy, designed for patients with type 1 diabetes. Goal this study was a quality assessment of IP therapy monitoring in patients with DM in a sample of the patient population with DM kept in the database of the General Health Insurance Company (VZP) which provided health care coverage for 63% of Czech population, and investigation of incidence of the photocoagulation and vitrectomy in this population.

Methodology: We identified all individuals in the VZP database who had a record of DM diagnosis or who had any antidiabetic therapy prescribed (ATC group A10) in the period of 2009-2014. It was identified in 866 570 patients with diabetes. Over the whole period there were overall n = 4 002 unique patients with, who were treated with IP. Quality control parameters were assessed like HbA1c examination and consumption of glucose test strips. Incidence of photocoagulation and vitrectomy has been reported as a percentage of all patients treated in the year.

Results: In years 2012, 2013 and 2014 was prevalence of photocoagulation 5.4%, 5.4% and 4.8% and vitrectomy 1.0%, 1.0% and 0.9%. Prevalence photocoagulation was different according to the region of treatment, ranging from 0% to 9.8%. In 2014 an average frequency of HbA1c examination equaled 3.38 per patient and 98.5% patients were examined for HbA1c at least once. An average consumption of glucose testing strips per patient was 879 pieces.

Conclusions: The pilot project of assessment of quality parameters for IP therapy shows that the patients treated with IP have HbA1c checked quite frequently and they measure their blood glucose 2-3 times a day on average. We assume that this is one of the main reasons for the decreasing incidence photocoagulation for diabetic retinopathy.

EP-RET-667

Waldenstrom's macroglobulinaemia presenting as bilateral central retinal vein occlusion*Radwan M.¹, Burgess F.², Ahmed Y.³, Kotb A.⁴**¹NHS Lothian, Princess Alexandra Eye Pavilion, Edinburgh, United Kingdom, ²NHS Lothian, Edinburgh, United Kingdom, ³NHS Fife, Dunfermline, United Kingdom, ⁴NHS, London, United Kingdom*

Purpose: Waldenstrom's macroglobulinaemia (WM) is a lymphoplasmacytic lymphoma characterised by the presence of monoclonal IgM paraprotein. The presenting symptoms of WM vary greatly.

Method: We present the case of a patient who first presented to the ophthalmology department with a history of decreased visual acuity (VA) and was eventually diagnosed with WM. Waldenstrom's macroglobulinaemia (WM) is a rare condition with an incidence of approximately 3 cases per million people per year. Hyperviscosity syndrome (HVS) refers to the clinical sequelae of increased blood viscosity, due to the increased circulating immunoglobulins in the case of WM.

Our case is the youngest reported case of bilateral simultaneous CRVO secondary to HVS with WM and that with the best reported VA at presentation. Rapid evaluation as described is important, especially in those patients with bilateral retinal vein occlusions or younger patients without classic vascular risk factors, as restoration of VA may be time-dependent. Serum/Plasma viscosity measurements should not be relied upon as the sole marker for possible WM in the setting of reduced VA, as CRVO-type appearances can be seen in those with very mildly-raised serum viscosity levels.

EP-RET-668

Retinal arteries occlusion in a course of intensification of Idiopathic Retroperitoneal Fibrosis (Ormond's disease) - a case report*Sapula M.¹, Brydak-Godowska J.¹, Kopacz D.¹, Turczyńska M.¹, Solarski K.¹, Kęcik D.¹, Kosieradzki M.², Chmura A.², Domagała P.², Maślińska M.³**¹Medical University of Warsaw, Ophthalmology Department, Warsaw, Poland, ²Medical University of Warsaw, Department of General and Transplantation Surgery, Warsaw, Poland, ³National Institute of Geriatrics, Rheumatology and Rehabilitation, Early Arthritis Clinic, Warsaw, Poland*

Purpose: We report the first case, to our knowledge, of the branch retinal artery occlusion (BRAO) unioocular according to intensification of Idiopathic Retroperitoneal Fibrosis.

Material and methods: We report a case of a female patient of 39 years old referred to Eye Clinic of 1st Medical Faculty, Medical University of Warsaw with a sudden painless vision loss in a lower part of left eye. The woman was under chronic glucocorticoid therapy and immunosuppression due to Idiopathic Retroperitoneal Fibrosis. Recently she had a history of abdominal acute sub-obstruction and since several days she was being diagnosed from sudden thrombocytopenia.

Clinical examination revealed mild posterior subcapsular cataract and occlusion of superior retinal arteries branches with pale retina in upper part of posterior pole. Vision acuity (VA) on admission to hospital in left eye was 20/20 with a vision loss in lower part of visual field.

Results: The patient undergone many clinical and laboratory tests which revealed very high level of inflammation markers and increasing ascites. Medical condition of patient worsened, few ecchymosis appeared on an eye fundus, VA declined to 4/20. On 7th day she presented acute peritonitis, explor-

atory laparotomy was performed with evacuation a large amount of lymph. After modification of immunosuppression treatment patient started to recover. Within 3 months VA inclined to 16/20.

Conclusion: The reason for BRAO was an intensification of Idiopathic Retroperitoneal Fibrosis. It is a rare disease limited to abdominal, retroperitoneal and pelvic cavity but aggravation of the illness may cause dysfunction in remote organs including ophthalmic system. This is the first case report of BRAO due to Ormond's Disease.

EP-RET-669

Macular thickness measurements assessed by spectral-domain optical coherence tomography in vitreomacular interface disorders*Bartol E.¹, Ramiro P.², Abadia B.¹, Isanta C.¹, Calvo P.¹, Ferreras A.¹**¹Miguel Servet University Hospital, Ophthalmology, Zaragoza, Spain, ²Hospital Clinico Universitario Lozano Blesa, Ophthalmology, Zaragoza, Spain*

Purpose: To compare macular thicknesses measured by spectral-domain optical coherence tomography (SD-OCT) between subjects with vitreomacular adhesion (VMA), vitreomacular traction (VMT), or macular hole (MH), and a control group.

Method: Retrospective, cross-sectional study of 13898 consecutive adult patients. The sample was divided into four groups according to the IVTS Group Classification: control group (13024 eyes), VMA (746 eyes), VMT (62 eyes), and MH (66 eyes). All patients were examined with Spectralis OCT (Heidelberg Engineering, Germany) using Fast Macula protocol. Macular thicknesses were calculated and compared in all nine Early Treatment Diabetic Retinopathy Study (ETDRS) areas. Poor quality scans were excluded.

Results: Central retinal thickness (CRT) was 276.03, 288.7, 325.15 and 398.77 μm in control, VMA, VMT and MH group, respectively. VMT and MH patients showed a significant ($p < 0.001$) thicker CRT compared to VMA and control group. All nine ETDRS areas were larger ($p < 0.001$) in MH patients compared to the other groups except in the outer superior section, where VMT subjects did not show significant differences ($p = 0.13$) compared to MH group.

Conclusion: Vitreomacular interface disorders cause a thickening of the macular measurements, specially in VMT and MH groups.

EP-RET-670

A circumscribed choroidal hemangioma - a case report*Mano S., Teixeira F., Caiado F., Pinto F., Canelas J.**Hospital de Santa Maria, Lisbon, Portugal*

Purpose: To describe a case of a circumscribed choroidal hemangioma, successfully treated with photodynamic therapy and intravitreal injection of ranibizumab 0.50 mg(0.05 ml).

Methods: Description of a case followed at a medical retina consultation.

Results: A 59-year-old female patient appeared with a decrease on the left eye (LE) visual acuity of 20/200. Ophthalmoscopically showed an oval orange mass at the posterior pole at the inferior macula, involving the fovea, and macular edema.

An optical coherence tomography (OCT) showed an intra-retinal fluid over a dome-shaped choroid elevation and an adjacent exudative retinal detachment. A fluorescein angiography revealed an early spotty hyperfluorescence, indocyanine green angiography showed hyperfluorescence tumour vessels in the

arterial phase with diffuse later hypofluorescence and fundus autofluorescence (FAF) displayed a grainy hyperautofluorescence at the mass. B-Scan ocular ultrasound (US) demonstrated an acoustically solid lesion (high internal reflectivity), dome-shaped, with a well-defined anterior face. She was treated with an intravitreal injection of ranibizumab 0.50 mg(0.05 ml) and 5 days later was performed photodynamic therapy (the laser spot diameter was 7300 micra, localized inferior and sparing the fovea, with radiant exposure of 100J/cm² and an exposure time of 166 seconds).

One month later, was observed an improvement of the visual acuity to 20/20 with no signs of edema on OCT and no retinal detachment; US revealed no alterations of ocular globe with no signs of the original choroidal mass.

After 1-year of follow-up, OCT showed a small intra-retinal fluid recurrence and an inferior epiretinal membrane, but no recurrence of the mass. The LE visual acuity remained 20/20, after 2 years of follow-up.

Conclusion: As demonstrated in our case, a circumscribed choroidal hemangioma can be successfully treated with photodynamic therapy although some complications can emerge, like an epiretinal membrane.

EP-RET-671

New surgery technique for macular hole

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Introduction: M.L.S, 57 years old, reported low visual acuity in the right eye. Upon examination: 20/100 and in the retinoscopy visualized macular hole. Performed Optical coherence tomography (OCT) in November / 16 that showed Grade IV macular hole. The treatment proposed was Vitreoretinal surgery. The objective of this work was to show a new technique of Macular Hole surgery.

Methods: Pars Plana Vitrectomy 23G, associated with the internal limiting membrane peeling (ILM), where it remains at the edges of the macular hole and then the ILM is introduced into the hole, followed by the exchange of gas fluid and C3F8 gas To 18%.

Results: After 3 weeks of surgery where the gas remained at 30% in the vitreous cavity, we performed a new OCT that showed total hole resolution.

Conclusion: This study suggests that the ILM permanence at the edges of the hole and its occlusion with MLI helps in the cicatricial process and closure. A cohort study and a greater number of individuals are necessary to prove this hypothesis.

EP-RET-672

Central serous chorioretinopathy treatment with photodynamic therapy - verteporfin

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Introduction: P.F.C.R, 59, male, airplane pilot, reported low visual acuity in the left eye for 30 days. On examination: 20/20 in right eye and 20/60 in left eye. In Retinoscopy visualized alteration at the Pigmentary Epithelium Retina level with pigment mobilization in right eye and with reduction of foveal brightness in left eye. Performed Angiofluoresceinography that presented hyperfluorescence by window defect in the right eye in the initial phases and hyperfluorescence by extravasation in the left eye. Optical coherence tomography (OCT) in December / 16 which showed subfoveal retinal pigment epithelium atrophy and Serous detachment in OE. The diagnosis was Chronic Central Serous Chorioretinopathy and the treatment proposed was Verteporfin Therapy (PDT). The objective of this study was to show the relevance of this treatment.

Methods: Photodynamic therapy was performed with intravenous injection of Verteporfin, a photosensitive drug, at a dose of 6mg / m² body surface for 10 minutes. After 5 minutes the non-thermal laser was applied over the affected area for 83 seconds (50J / m² to the intensity of 600mw / cm²).

Results: After 30 days we performed a new OCT that showed resolution of the subretinal fluid and reduction of the central foveal thickness of 179 microns in the left eye. The visual acuity was 20/20 after the left eye procedure.

Conclusion: This study suggests that the use of Photodynamic Therapy with Verteporfin is effective in cases of Chronic Central Serous Chorioretinopathy.

EP-RET-673

Correlation between choroidal thinning and glycosylated haemoglobin in patients with type 2 diabetes

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Purpose: To evaluate the relationship between choroidal thickness in patients with type 2 diabetes (T2D) and glycosylated hemoglobin (HbA1c) levels.

Method: This prospective, cross-sectional study, included 157 eyes of 94 T2D patients and 71 eyes of 38 age-matched healthy individuals. The T2D group comprised 48 eyes with diabetic macular edema (DME). All participants underwent imaging with swept source-optical coherence tomography (SS-OCT) and measurement of HbA1c. Subfoveal (SF) choroidal thickness, and choroidal thickness at 500-µm intervals up to 2500 µm nasal and temporal from the fovea were measured using the SS-OCT. Choroidal thicknesses were compared between groups and correlated with diabetes duration and HbA1c levels.

Results: Based on the diabetic retinopathy (DR) severity scale, the T2D group had 49 eyes without DR, 27 eyes with mild non-proliferative (NP) DR, 60 eyes with moderate NPDR, 14 eyes with severe NPDR, and 7 with proliferative DR. Mean diabetes duration was 16.6±9.5 years, while mean HbA1c levels was 7.7±1.3%. Overall, the choroid was thinner in T2D patients compared to healthy controls (mean SF thickness was 189.4±68.9 µm and 228.1±78.8 µm, respectively; p< 0.001). Within the T2D group, choroidal thickness was not different between DME and non-DME patients. Individuals with DME had reduced choroidal thickness in all measurements, except at 2000 and 2500-µm nasal positions compared to healthy controls. There was a moderate correlation between choroidal thickness in all measurements and HbA1c levels (SF: r=0.342; p=0.017). Diabetes duration did not correlate significantly with choroidal thickness.

Conclusion: SS-OCT measurements revealed that the choroid was thinner in T2D patients than in healthy individuals. The HbA1c level correlated moderately with macular choroidal thickness.

EP-RET-674

Role of stromal cell-derived factor 1 gene polymorphism in retinal vein occlusion

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Purpose: The purpose of this study was to evaluate the association between *stromal cell-derived factor (SDF1)-3'G(801)A* polymorphism and neovascularisation (NV) complications of retinal vein occlusion (RVO).

Method: 130 patients with RVO (median age: 69.0, range 35-93 years; male/female - 58/72; 55 patients had central RVO, 75 patients had branch RVO) were enrolled in this study. In the RVO group, 40 (30.8%) patients were diagnosed with NV complications of RVO and 90 (69.2%) patients without NVs. The median follow up period was 40.3 months (range: 18-57 months). The *SDF1-3'G(801)A* polymorphism was detected by PCR-RFLP. Allelic prevalence was related to reference values obtained in the control group consisted of 125 randomly selected, age and gender matched, unrelated volunteers (median age: 68.0, range 36-95 years; male/female - 53/72). Statistical analysis of the allele and genotype differences between groups (RVO patients vs controls; RVO patients with NV vs RVO patients without NV) was determined by chi-squared test. P value of < 0.05 was considered statistically significant.

Results: The *SDF1-3'G(801)A* allele and genotype frequencies of RVO patients were similar to controls (*SDF1-3'A* allele: 22.3% vs 20.8%; *SDF1-3'(801)AA*: 5.4% vs 4.8%, *SDF1-3'(801)GG*: 60.8% vs 63.2%, $p > 0.05$). The frequency of *SDF1-3'(801)AA* and *SDF1-3'(801)GA* genotypes, as well as the *SDF1-3'(801)A* allele frequency were higher in RVO patients with NV versus in patients without NV complication (*SDF1-3'(801)AA+AG* genotypes: 57.5% vs 31.1%, $p = 0.008$; *SDF1-3'(801)A* allele: 35.0% vs 16.7%, $p = 0.002$) or versus controls (*SDF1-3'(801)AA+AG* genotypes 57.5% vs 36.8%, $p = 0.021$; *SDF1-3'(801)A* allele: 35.0% vs 20.8% $p = 0.01$). Carrying of *SDF1-3'(801)A* allele increased the risk of neovascularisation complications of RVO by 2.69 (OR, 95% CI = 1.47-4.93).

Conclusion: These findings suggest that carrying *SDF1-3'(801)A* allele plays a role in the development of neovascular complications in retinal vein occlusion.

EP-RET-675

Optical coherence tomography findings in a case of acute macular neuroretinopathy

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Purpose: To report a case of acute macular neuroretinopathy (AMN) with 3 years of follow-up.

Method: A 41-year-old woman presented with a 6-week history of a "blurry spot" in her right eye. The patient underwent detailed clinical examination including best-corrected visual acuity (BCVA), Amsler grid testing and visual field examination at the first visit. OCT examination (Spectralis OCT, Heidelberg Engineering Inc, Germany), fundus autofluorescence imaging, color and red-free fundus photographs were also performed. BCVA, Amsler, OCT, fundus autofluorescence and fundus photography were repeated 1, 3, 5 and 36 months after the first visit.

Results: BCVA was 20/20 in both eyes of the patients on each visit. Amsler grid testing revealed an iron-shaped scotoma inferotemporal to the center of fixation in the right eye, which was not detectable with visual field examination. On the OCT scans, we could observe a hyperreflective band in the inner nuclear layer and a loss of signal underneath in the outer plexiform layer. In the area corresponding to the hyperreflective band in the inner nuclear layer, an ill-defined intraretinal lesion was seen on both the color and red-free fundus photographs that appeared slightly brighter than its surroundings. Fundus autofluorescence images were unremarkable. On the OCT images a slight fading of the hyperreflective band was observed during the 3-year follow-up period, however the size of the scotoma on the Amsler grid was unchanged.

Conclusion: AMN is a rare disease that is difficult to diagnose based on fundus examination. In our case, OCT showed alterations in the inner nuclear and outer plexiform layers of the macula that could be the result of microvascular changes in the deep capillary plexus of the retina. However, the pathology of the disease is still unclear.

EP-RET-676

Malondialdehyde in subretinal fluid and high myopia

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Purpose: To measure the content of malondialdehyde (MDA) in subretinal fluid (SRF) of myopic and non-myopic patients and to establish, if any, the relationship between this component and the degree of myopia, duration and extent of the pathology, and age or gender of the patients.

Method: Protein content and MDA concentration was determined in SRF of 71 myopic and non-myopic patients with rhegmatogenous retinal detachment undergoing retinal detachment surgery. Based on their refraction and retinal pathology, patients were divided into three different groups: emmetropes (non-myopic), normal myopia (less than 6 negative ametropic dioptres or axial eyeball length under 26 mm) and high myopia (higher values in either negative dioptres or axial length than in normal myopia). MDA concentration in SRF was measured by the high pressure liquid chromatography method.

Results: A positive correlation was determined between the degree of myopia and the MDA content in SRF, evidencing significant differences ($p < 0.001$) between high-myopic patients and the two other groups. Moreover, protein concentration in SRF was significantly increased in patients with high myopia over those belonging to the control or normal-myopic groups (both, $p < 0.001$). However, no correlation was found between MDA concentration in SRF and evolution time of retinal detachment and age of patients, either in all of them nor in non-myopic patients.

Conclusion: Differences observed between MDA concentrations in high-myopic patients in comparison to the other groups might relate to the accumulation of this biomarker in the SRF as a product of the lipid peroxidation. This is consistent with the hypothesis that oxidative damage plays a crucial role in the development and progression of myopia, being significantly different in patients with normal myopia and those with high myopia.

EP-RET-677

Diagnosis of toxoplasma chorioretinitis by real-time PCR on aqueous and vitreous humor

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Aim: *Toxoplasma gondii* is one of the cause of retina infections. Ocular toxoplasmosis (OT) is responsible of 20-60% of posterior uveitis. The infection can have relevant sequelae in immunocompromised patients and in children with congenital infection. The infection is usually asymptomatic and the first clinical signs occur a long time after the disease onset. When not resolved timely, OT could lead to permanent retina damage. Beside clinical observation routine diagnosis is confirmed by *Goldmann-Witmer Coefficient* on aqueous humor associated to immunoblotting in peripheral blood and eventually PCR. Here a diagnostic report, based on a 6 years experience in OT molecular diagnosis, is proposed.

Methods: Paired aqueous humor (AH; N=44) and/or vitreous humor (VH; N=7) and serum samples were collected from 51 patients in 2010-2016 at Parasitology Lab., S. Matteo Hos. Foundation. 40 patients suffered from chorioretinitis, 9 uveitis, 1 panuveitis and 1 vitreitis. Serum samples were tested by serology with LIAISON® Toxo IgG/IgM CLIA, ETI-ToxoA (Diasorin), VIDASTOXO IgG ELFA, ISAGAToxo IgM (bioMerieux), ImmunoblotToxo IgG/IgM (LD-Bio). Ocular samples DNA was extracted with easyMAG (bMx) and tested by realtime PCR with *Toxoplasma g.* ELITE MGB® Kit (ELITechGroup). 2 samples were excluded for invalid result. 8 AH samples with a larger volume were also run with ImmunoblotToxo IgG/IgM (LD-Bio).

Results: In total 49 samples were analysed. 4 patients were negative with both serology and PCR. With PCR 25/49 patients were negative and 22/49 positive. In detail 4/7 VH and 22/44 AH. All the results were clinically confirmed by recovery after therapy.

Conclusions: The improvement of molecular assay results in more standardized and sensitive PCR. Our data evidence that the AH PCR confirmatory approach allows timing therapeutic interventions in chorioretinitis. The use of CE-IVD assay as *Toxoplasma g.* ELITE MGB® Kit positively influences method standardization and results reproducibility.

ELECTRONIC POSTER PRESENTATIONS
UVEITIS

EP-UVE-679

**Vitreoretinal lymphomas - one centre experience**

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Purpose: The aim of our retrospective study was to compare the survival rate and prognosis of patients with vitreoretinal lymphoma with and without central nervous system (CNS) involvement.

Method: Twenty patients with vitreoretinal lymphoma were diagnosed in our centre between 2004 and 2016. All patients underwent diagnostic pars plana vitrectomy with vitreous cytology analysis. Flow cytometry of vitreous was analyzed in 13 patients.

Treatment was determined by hematologist and ophthalmologist according to the clinical manifestation.

Results: In group of twenty patients were 10 men and 10 women, median age was 60 years. Primary vitreoretinal lymphoma (PVRL) was determined in 10 patients (50%), primary CNS lymphoma with vitreoretinal involvement (PCNSL-VRL) was detected in 7 patients (35%) and 3 patients (15%) had primary CNS lymphoma with isolated vitreoretinal relapse (secondary VRL, SVRL).

All patients with PVRL and SVRL received intravitreal chemotherapy with methotrexate, 6 patients with PVRL had also systemic treatment (methotrexate based). All PCNSL-VRL and SVRL patients received both systemic and local CNS treatment.

5-year overall survival (OS) was observed to be longer in PVRL patients compared to PCNSL-VRL (76% v. 54%, p = NS). 5-year OS in SVRL group was 67% from the first intravitreal relapse. Systemic treatment in PVRL patients showed better results, however the statistical significance was not reached.

The median of OS after the first relapse was in all 20 observed patients 53.4 months; isolated intravitreal relapse had better prognosis than CNS relapse (97.6 v. 6.2 months, p = 0.018).

Conclusion: Vitreoretinal lymphoma is a life-threatening disease, with 5-year survival rate of 73% in our study. Patients with PVRL seem to have better prognosis compared to PCNSL. However, most results are not statistically significant due to small number of patients.

EP-UVE-680

Post-streptococcal syndrome caused all types of uveitis

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Purpose: To report unusual findings of post-streptococcal uveitis in three cases

Method: Case reports

Results: Three patients with history blurred vision. Ophthalmic examination noted the presence of uveitis. Etiologic diagnosis concluded is post-streptococcal uveitis. Findings initially and in the course of pathology were: granulo-

matous uveitis, intermediate uveitis, posterior uveitis. All patients had a good response to penicillin and steroid therapy. Some sequellae persisted.

Conclusion: post-streptococcal syndrome should be considered in the etiology of all types of uveitis. And antistreptolysin O titer should be performed.

EP-UVE-681

Swept-source optical coherence tomography angiography in West Nile virus chorioretinitis and associated occlusive retinal vasculitis

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Purpose: To report optical coherence tomography angiography (OCTA) findings in a patient with West Nile virus (WNV) occlusive retinal vasculitis.

Methods: A 65-year-old diabetic man with a history of fever of unknown origin two weeks earlier complained of sudden decreased vision in the left eye. The patient was diagnosed with bilateral WNV chorioretinitis associated with occlusive retinal vasculitis in the left eye. He was evaluated using Swept-source optical coherence tomography angiography (OCTA)

Results: OCTA of the left eye showed extensive well-delineated hypointense greyish areas of retinal capillary hypoperfusion and perifoveal capillary arcade disruption in the superficial capillary plexus, and larger greyish areas of capillary hypoperfusion, capillary rarefaction, and diffuse capillary network attenuation and disorganization in the deep capillary plexus.

Conclusion: OCTA may be a valuable tool for assessing non-invasively occlusive retinal vasculitis associated with WNV infection. It allows an accurate detection and precise delineation of areas of retinal capillary hypoperfusion in both the superficial and deep capillary plexuses.

EP-UVE-682

Development of an experimental model of chronic uveitis in rabbits

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Purpose: Uveitis is responsible for most of the cases of irreversible blindness in the world. This scenario stimulates the development of new treatments, however, better models are needed to simulate the human disease. In the present work the main goal was the development of an experimental model of chronic uveitis in rabbits, a suitable species due to its ocular morphology and size, by the injection of BCG (Bacillus Calmette-Guérin).

Method: The experimental protocol was approved by the ethics committee of FUNED and was conducted in accordance with ARVO statement. Twenty-four New Zealand rabbits underwent a subcutaneous injection of 10 mg of BCG for pre-immunization. In order to induce uveitis, 14, 21 and 28 days later, animals were injected intravitreally with 40 µg or 60 µg of BCG (group 1 and 2 respectively) and saline (control group). 24 hours after each intravitreal injection they were clinically evaluated through slit lamp, direct ophthalmoscopy, retinography, ocular ultrasonography and samples were collected for histology and protein quantification.

Results: An anterior inflammatory response is seen 24 hours after the first challenge in groups 1 and 2, characterized by conjunctival hyperemia, iris congestion and the presence of cells in anterior chamber. After the second challenge, a panuveitis can be observed in both test groups by the involvement of the vitreous humor and retina, with an intense vitreous haze and retinal

inflammatory cells, as confirmed by histopathology. An exacerbated response occurred due to the third intravitreal injection of BCG. Clinical examination showed intense inflammatory opacities, hemorrhages and retinal detachment in some cases. The control group did not present any changes during the experiment.

Conclusion: The administration of 2 intravitreal injections of BCG generates a chronic panuveitis in rabbits with the involvement of anterior segment, vitreous humor and retina, a suitable model for the study of new treatments.

EP-UVE-683

Challenging on diagnosis and management of pregnant woman with scleritis: a case report

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Purpose: To report a case of a pregnant woman with scleritis.

Method: A case report. A Gravida 2 Para 1 25 weeks of gestation, 28-year-old woman with a chief complaint of decreased vision in both eyes, no severe eye pain and photophobia, preceded by headache, redness, epiphora and bluish appearance of both eyes. She had experienced recurrent redness of both eyes since 2 years ago. From anterior segment examination we found ciliar injection, scleral thinning with uveal shadow, scleral staphyloma in left eye, cicatrix and neovascularization of cornea, and posterior synechiae in right eye, and hazy lens in both eyes. Ultrasonography has found vitreous opacity with incomplete posterior vitreous detachment of both eyes and retinal traction in right eye. Blood test suggests high ESR, ANA (+) with centromere pattern, ANCA (-). Patient diagnosed with necrotizing scleritis, anterior uveitis, corneal cicatrization, and vitreous opacity. Patient was given an artificial tears and fluorometholone 0.1% eye drop.

Results: Later on ANA profile test was performed and revealed Ro-52 recombinant (++). Patient was given additional methylprednisolone 1 x 48mg/ day tapered off in a week. After 3 weeks of therapy, sclera appeared less inflamed and uveal shadow was less apparent although visual acuity remains the same.

Conclusion: Scleritis is an immune-mediated disease has complex pathophysiology, 40% associated with an underlying systemic autoimmune disease and 50% remains idiopathic. One and a half necrotizing scleritis associates with flares of underlying disease and require therapy for both ocular and systemic disease.

EP-UVE-684

Ocular sarcoidosis: our reality for the past six years

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Purpose: In sarcoidosis, ocular manifestations are common and can be the initial or even the only clinical manifestation. The aim of this study was to analyze the demographic parameters, clinical manifestations, treatment and the major ocular complications in patients with ocular sarcoidosis.

Method: We conducted a descriptive and retrospective study that included patients with the diagnosis of ocular sarcoidosis, followed by inflammatory ophthalmology and immune-mediated disease consults, between 2009 and 2015.

Results: Eleven patients with the diagnosis of ocular sarcoidosis were identified, with a predominance of females (54,5%) and caucasians. The average age at diagnosis was 45 ± 14 years. Sarcoidosis was exclusively ocular in

36%. The first manifestation of sarcoidosis was eye disease in 90.9 % of cases. Nine cases of uveitis, one of nodular scleritis and one of interstitial keratitis. were observed. Topical corticoid treatment was applied in 100% of cases, with only one achieving remission of the disease. Oral corticoid treatment was necessary in 10 cases, four of which needed a high dose methylprednisolone induction. Methotrexate was the adjunctive immunosuppressive treatment of choice in 45% of cases. There was one refractory case for conventional immunosuppressive therapy, having achieved remission with biologic agent infliximab.

Conclusion: Uveitis was the commonest ocular manifestation, and there was a predominance of panuveitis. Systemic corticoid and methotrexate were the most used immunosuppressive treatments for maintaining the controlled state of the disease.

EP-UVE-685

Ocular behçet's disease: a pediatric case report

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Purpose: Behçet's disease is a chronic multisystemic inflammatory disorder of unknown aetiology characterized most commonly by recurrent oral aphthosis, genital ulcers, skin and ocular lesions. Behçet's disease generally affects young adults and its occurrence in children is uncommon.

Method: A 14-year-old boy presented with unilateral red right eye and blurred vision. His past medical history was significant for recurrent oral and genital ulcerations from the age of 5 yr. At admission, best-corrected visual acuity was 0.9 in the right eye and 1.0 in the left eye. A slit lamp examination revealed a right eye with diffuse conjunctival injection, endothelial dust and a 2+ cells and flare in the anterior chamber. Fundus exam was normal. The ocular findings supported the diagnosis of an acute anterior uveitis. Physical examination also showed a well-demarcated ulcer in his oral mucosa. Other systemic examinations were unremarkable. Laboratory findings were normal except for a slightly high sedimentation rate. Pathergy test was positive and HLA typing was positive for HLA-B51.

Results: Our patient fulfilled the International criteria for Behçet's disease. The child was treated with mydriatic eye drops, topical corticosteroid and colchicine 1 mg daily, with good response.

Conclusion: The clinical picture of pediatric Behçet's disease is similar to that in adults, and eye involvement represents one of the most serious manifestations of the disease. Recognize Behçet's disease in pediatric age group can be challenging. Because of its insidious nature and rarity in pediatric population, Behçet's disease tends to be diagnosed only when its symptoms are in frank expression.

This case highlights the importance to consider Behçet's disease in the differential diagnosis of childhood uveitis, as visual prognosis of these patients depends on a prompt therapeutic approach.

EP-UVE-686

Frosted branch angiitis secondary to toxoplasmosis: a case report

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Purpose: To present a case of frosted branch angiitis secondary to unilateral toxoplasmosis chorioretinitis.

Method: A 27-year-old female patient presented to our clinic with sudden loss of vision in her right eye. On ophthalmologic examination, visual acuity was hand motions in the right eye and 10/10 in the left eye. Slit lamp exam showed trace anterior chamber inflammation in the right eye. Fundus examination revealed diffuse and extensive retinal perivascular sheathing, optic disk and macular edema, perimacular microhemorrhages and hyperpigmented scar in the upper macular region. The ocular examination was normal in left eye.

Results: Fundus fluorescein angiography was compatible with frosted branch angiitis in the right eye. There was extensive white sheathing surrounding the retinal veins and some of the retinal arteries from the posterior pole to the periphery, with papillary edema. Optic coherence tomography showed diffuse subretinal edema. The patient is scheduled for pulse steroid treatment. All serological tests revealed no obvious abnormalities except for antitoxoplasma IgG antibody. Treatment with concurrent clindamycin and trimethoprim+ sulfamethoxazole was initiated in addition to steroid therapy in the patient. Visual acuity was improved to 20/200 in the right eye at follow-up periods.

Conclusion: Toxoplasma chorioretinitis should be considered in the etiology of eyes with secondary frosted branch angiitis accompanied by chorioretinal scarring. Specific antibiotic supplementation is essential in addition to systemic steroid therapy in early treatment.

EP-UVE-687

Macular thickness and visual acuity in patients with hypopyon and anterior uveitis

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Purpose: To establish how the presence of hypopyon affects macular thickness and visual acuity in patients with anterior uveitis (AU).

Method: Ninety-one patients (91 eyes) with AU take place in the study. Every patient has complete eye examination and spectral optical coherent tomography (SD-OCT) of the macula with RTVue-100 (Optovue) using EMM5 scanning protocol. The patients are divided into two groups according to the presence or absence of hypopyon. The central foveal thickness (CFT), the total macular thickness (TMT), the changes in visual acuity, the presence of macular edema (ME) and epiretinal membrane (ERM) are analyzed.

Results: Of all 91 patients with AU, hypopyon is observed in only 8 (8.8%), the CFT is 296.8±46.1 µm, and the TMT - 335.5±37.5 µm. The CFT in the patients without hypopyon is 265±33.4 µm and the TMT - 304±23 µm. The difference in macular thickness between the two groups is statistically significant (Independent-Sample T-Test; p<0.05). The visual acuity, before treatment, of the patients with hypopyon is 0.27±0.23, and of the rest - 0.54±0.31, the difference is significant (Mann-Whitney test; p<0.05). After treatment, the visual acuity between the two groups is not statistically significant (with hypopyon - 0.68±0.39; without hypopyon - 0.8±0.24; Mann-Whitney test; p>0.05). A ME is observed more frequently in patients with hypopyon (U=2.35; p<0.05). An ERM is not registered in any patients with hypopyon uveitis.

Conclusion: The patients with AU and hypopyon demonstrate greater macular thickness, lower visual acuity before treatment and higher incidence of ME. After treatment, the two groups show no difference in visual acuity. The lower visual acuity, before treatment, in patients with hypopyon is a result of the transparent ocular media being blurred.

EP-UVE-688

Clinical features of uveitis in a tertiary care center in Southern Turkey

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Purpose: To evaluate the demographic, etiological and clinical features of uveitis patients in our tertiary referral center.

Method: In this retrospective study, medical data of patients diagnosed with uveitis from 2013 to 2017 were reviewed. Analysis of demographic features, ophthalmological examinations, laboratory and clinical findings, therapeutic, and multidisciplinary approaches were made for each patient.

Results: In this study data were collected from 287 patients. Excluded were patients who had missing data or with a follow-up of less than 3 months. A total of 179 patients with a mean age of 36±6 years old (8-73) were enrolled. Of the patients 88 (49.2%) were female, 91 were male (50.8%). Bilateral cases accounted for 57% of cases (n=102). Panuveitis, seen in 86 cases (48%), was the most common anatomical type. The most common presenting symptom was blurred vision (n=118, 65.9%); whereas, the most common complication due to uveitis were secondary cataract and posterior synechiae each seen in 28 (15.6%). A specific diagnosis could be established in 83 patients (46.4%); Behcet's disease being the most common (26 patients, 14.5%). Pediatric cases, which were mostly idiopathic (51.8%) accounted for 27 of the patients (15.1%). The most common optical coherence tomography and fluorescein angiography signs were cystoid macular edema (n=40, 22.3%) and hyperfluorescence of the optic nerve (n=67, 37.4%) respectively. Toxoplasma retinochoroiditis were identified as the leading cause of infectious uveitis (n=19, 10.6%). In 5 (2.8%) patients uveitis was associated with tuberculosis.

Conclusion: Uveitis, as being associated with systemic diseases and causing severe ocular complications, needs to be evaluated in a multidisciplinary approach. All findings obtained regarding uveitis etiology, clinical findings, and treatment would provide precise data in terms of community health.

EP-UVE-690

Systemic antiparasitic medication alone or combined with surgical aspiration in treatment of trematode-induced granulomatous anterior uveitis among children in rural areas of Egypt

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Purpose: The study aimed to evaluate the efficacy of systemic antiparasitic medications alone or in combination with surgical aspiration in management of trematode-induced anterior uveitis.

Method: Children who were presented with granulomatous anterior uveitis associated with clinical evidence of parasitic infestation were selected for the study. Patients were divided according to the granuloma size into 2

groups; small sized granuloma patients (less than 2×2 mm) who were treated with antiparasitic medications only (n=14), and large sized granuloma patients (more than 2×2 mm) who were treated with antiparasitic medications followed by surgical aspiration (n=16). Basic demographics, clinical data, visual acuity, corneal thickness, granuloma size, anterior chamber activity (flare and cells), and treatment regimen were recorded and analyzed. Moreover, focused systemic work-up and laboratory studies including stool and urine analysis, CBC, chest x ray and schistosomiasis titre were performed.

Results: Thirty eyes of 30 patients were included in the study with a mean age of 13.8±2.9 years. 100% of the patients were males with positive schistosomiasis titre in 90%. Those patients were examined and were followed between 2014 and 2016 at Mansoura ophthalmic center, Mansoura University. Both groups showed statistically significant improvement in VA, AC activity, corneal thickness and granuloma size (p value < 0.001). However, the group treated with combined medical and surgical aspiration showed completely dissolved granuloma in all patients which indicates a higher efficacy and faster recovery over the group treated medically.

Conclusion: Swimming in the river and local ponds is a common cause of trematode-induced granulomatous anterior uveitis among children living in the rural areas of Egypt. Antiparasitic medications alone was found to be effective in treatment of small sized granuloma. Surgical aspiration is an effective adjuvant procedure to treat large sized anterior chamber granulomas.

EP-UVE-691

Vogt Koyanagi Harada disease: clinical case report

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Purpose: To describe clinical features of Vogt Koyanagi Harada (VKH) syndrome and to illustrate the clinical response to early and aggressive treatment by corticosteroids and mycophenolate mofetil therapy.

Method: A retrospective case report of a 28-year-old caucasian woman who presents fever, headache, redness and blurring of vision in both eyes in absence of any history of ocular trauma. Slit lamp examination, optical coherence tomography (OCT), fundus fluorescein angiography (FFA), and autofluorescence were performed to monitorise since first appearance.

Results: Based on the revised diagnostic criteria, complete VKH syndrome is diagnosed. First, slit lamp examination showed granulomatous uveitis, and the OCT showed multiple serous retina detachment with bilateral optic disc edema. After three days of intravenous megadose corticosteroids therapy, the patient's vision improved and subretinal fluid disappeared, to evolve into a sunset glow fundus weeks later. After four months of treatment with a high dose of oral corticosteroid combined with an immunosuppressive agent (mycophenolate mofetil) the patient remains asymptomatic.

Conclusion: VKH disease is an infrequent chronic, bilateral, granulomatous ocular and multisystemic inflammatory condition of unknown cause. In order to uphold visual acuity, an early and accurate diagnosis is necessary, followed by a long and aggressive immunosuppressive treatment. Mycophenolate mofetil is a valid choice of immunosuppressive agent because it provides easy systemic control and allows for a reduction in the corticosteroids dosage.

EP-UVE-692

Drug-induced panuveitis in advanced stage melanoma: a case report

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Purpose: To present a Dabrafenib-induced panuveitis in an oncologic patient with advanced stage melanoma

Method: A retrospective case report of a 55-year-old caucasian woman with BRAF-mutated metastatic melanoma and review of the literature and drug data sheet. Clinical examination and laboratory test were carried out in weekly visits to the Oncology department, while slit lamp examination and Optic Coherence Tomography (OCT) screening were performed for monitorisation in the weekly visits to the Ophthalmology department.

Results: The main ocular symptom was sudden onset of painless bilateral visual loss. The patient had been treated with Dabrafenib and Trametinib for a year. Slit lamp examination revealed severe bilateral non-granulomatous panuveitis and iris nodules. Also, choroidal thickening and chorio-retinal folds were detected by OCT. Topical corticosteroid treatment was initiated and it was decided to progressively reduce the intake of Dabrafenib—however, ocular inflammation could not be controlled, so the treatment was eventually suspended. One month later, the patient remains asymptomatic.

Conclusion: Dabrafenib and Trametinib are effectors in the mitogen-activated protein kinase (MAP-K) pathway, which plays an important role in the pathophysiology of melanoma. Both drugs are proven to increase the survival rate in patients with metastatic melanoma, but they have also been associated with the development of uveitis. Uveitis is an unusual side effect that can affect less than 1% of patients treated with Dabrafenib—a percentage that increases when used in combination with Trametinib. If uveitis is diagnosed, the dosage of Dabrafenib must be discontinued until the inflammation is stable, without modification of the Trametinib dosage. An ocular examination is recommended in advanced stage melanoma patients whenever symptoms occur.

EP-UVE-693

Case report: intravitreal voriconazole for treatment of early stage endogenous fungal (Candida Albicans) endophthalmitis with mild vitritis

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A 61 year old Caucasian female who was hospitalized at the Department of abdominal surgery due to fungal sepsis following iatrogenous duodenum perforation after ERCP was presented with a few days history of visual floaters in her right eye and bilateral blurry vision. Her VA was 0.3 on the right and 0.4 on the left. Clinically there was a conjunctival injection of her right eye, poor dilatation of the right pupil, cells, haze and opacities in the vitreous particularly in front of the macula and the optic disc. There were a lot of paramacular yellowish nodular retinal lesions, peripherally there were two bright fresh lesions and a few surrounding intraretinal hemorrhages. These changes, but to a lesser extent were also present in the left eye.

At presentation she was being treated with intravenous Fluconazole 400 mg/12h for one day and intravenous antibiotics due to sepsis. We decided to additionally treat with intravitreal injections of Voriconazole (100 µg/0.1 ml) and Atropine eye drops.

The following day she cited fewer floaters and better vision, her VA improved to 0.6 on the right and 0.8 on the left, clinically there was marked improvement,

less opacities and less haze. We continued with daily Voriconazole injections, altogether 6x in her right eye and 2x in her left eye, parenteral Fluconazole and closely monitored the patient. During following days there was continuous regression of opacities and lesions, and improvement of vision. After two weeks we switched to oral Fluconazole. We finished treatment after three months. Her VA was 1.0p on the right and 1.0 on the left. There were no more visible fungal lesions, instead there were spots of retinal atrophy.

The case of early stage bilateral fungal endophthalmitis with mild vitritis responded fully to parenteral Fluconazole and intravitreal Voriconazole treatment without the need for vitrectomy.

EP-UVE-694

Bilateral endogenous endophthalmitis in immunosuppressed patient following acute pancreatitis

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Purpose: To present a case with bilateral endogenous endophthalmitis that occurred after acute pancreatitis.

Method: Patient underwent complete ophthalmological examination, fundus photography and OCT. Additional systemic examinations included: complete blood count, standard biochemistry, serology for HSV, VZV, CMV, HIV, Toxoplasma gondii and consultation of infectious disease specialist.

Results: In November 2013, a 55 year-old male patient was examined for painful bilateral vision loss, that lasted for 2 weeks and occurred after hospitalization for acute pancreatitis and prolonged treatment with multiple antibiotics. At admission visual acuity in right eye was 20/600 and left 20/400. Intraocular pressure was within limits. In both eyes, anterior serofibrinous uveitis was noted, along with dense vitritis and retinal infiltrates in the posterior pole. In OCT bilateral macular deposits were confirmed. In laboratory findings, leukocytosis, elevated erythrocyte sedimentation rate and fibrinogen were seen. Having in mind specific medical history and characteristic clinical presentation that indicated very probable mycotic etiology, the aqueous sample was taken and treatment initiated with bilateral intravitreal administration of Amphotericin B and systemic antimycotics (Fluconazole). In addition, topical corticosteroids and cycloplegics were administered. Considering difficult patients' systemic condition, infectious disease specialist was consulted and systemic treatment limited to three weeks, while intravitreal injections were repeated two more times. Candida albicans was isolated from aqueous samples. After treatment intraocular inflammation resolved. After one year of follow-up visual acuity in right eye was 20/100 and left 20/40.

Conclusion: Patients with endogenous endophthalmitis often have associated systemic potentially fatal diseases. Identification of causative pathogen is difficult, and often there are limitations in administration of systemic medications.

EP-UVE-695

Bilateral toxic maculopathy following Ritonavir treatment in patient with AIDS*Radosavljevic A.^{1,2}, Ilic A.^{1,2}, Jaksic V.^{2,3}, Risimic D.^{1,2}**¹Hospital for Eye Diseases, Clinical Centre of Serbia, Uveitis Department, Belgrade, Serbia, ²School of Medicine, University of Belgrade, Ophthalmology, Belgrade, Serbia, ³Hospital for Eye Diseases "Prof Dr Ivan Stanković", Medical Center Zvezdara, Medical Retina, Belgrade, Serbia*

Purpose: To present bilateral atypical toxic macular complications in patient with AIDS, on Ritonavir treatment.

Method: Patient underwent complete ophthalmological examination, fundus photography and OCT. Additional systemic examinations included: serology for HSV, VZV, CMV, HIV, Treponema pallidum (VDRL, TPHA), Toxoplasma gondii and consultation of infectious disease specialist.

Results: In January 2016, a 48 year-old female patient was examined due to severe progressive bilateral vision deterioration that lasted for 8 months. In both eyes, visual acuity was 20/100 and intraocular pressure 16 mmHg. Patient was ex intravenous drug addict and was HIV and HCV positive. She has been on HAART treatment for 3.5 years, CD4+ cell count was 256, had good overall physical status and no opportunistic infections. Since one year ago, drug Ritonavir was introduced in the treatment. The findings on anterior segment were unremarkable, but on both eye fundi symmetrical findings of Bull's eye maculopathy with otherwise normal appearance of other retina and optic nerve were noted. Macular deposits and initial atrophy were seen in OCT. Infectious disease specialist was consulted and excluded syphilis, toxoplasmosis and systemic mycoses. Having in mind symmetrical clinical findings, possible drug toxicity was suspected. Ritonavir acts as HIV protease inhibitor and was associated with toxic maculopathy or optic neuropathy, although these side effects were described in very few patients. The drug was discontinued and visual acuity stabilized at 20/100 during one year follow-up. **Conclusion:** Differential diagnosis of fundus changes in patients with AIDS is very complex. The most important is to rule out infectious etiology, although immune recovery uveitis, masquerade syndromes and drug toxicity must be kept in mind in atypical cases.

EP-UVE-696

Uveitis in a neurological patient*Bruxelas C., Cordeiro M., Silva P., Simoes P., Guedes M.
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Purpose: HTLV-1 is a retrovirus of the oncovirus family identified as a causative agent of Adult T-cell Lymphoma/Leukemia and HTLV-1-Associated Myelopathy/Tropical Spastic Paraparesis (HAM/TSP). It is endemic to Japan, Melanesia, Caribbean Islands, Central and South America, and central Africa. The infection can affect the eye in multiple ways including malignant infiltrates; retinal degeneration; neurophthalmic disorders; keratoconjunctivitis sicca; and, not uncommonly, uveitis. The purpose of this paper is to describe a case of an increasingly frequent pathology in non-endemic countries.

Method: The authors present the case of a 32-year-old woman from central Africa admitted to the neurology ward with spastic paraparesis and lower limb hypoesthesia and dysesthesia. Lumbar puncture revealed inflammatory signs and positive HTLV-1. During her stay, she developed sudden onset of floaters, pain and blurred vision OS. Best Corrected Visual Acuity (BCVA) OD was 6/6 and OS 6/15. OD examination was normal. On slit-lamp biomicroscopy OS had anterior chamber cell reaction (2+) and endothelial keratic precipitates. Fundoscopy revealed vitritis (3+) and severe venous vasculitis of the central

retinal vessels. After exclusion of more frequent agents, HTLV-1 uveitis was assumed. Topical and oral prednisolone were initiated at 1mg/kg/days for five days with subsequent taper.

Results: 13 days after commencing corticosteroids BCVA OS was 6/6, the anterior segment showed no signs of inflammation and the fundus had only mild residual vitritis with no significant vasculitis.

Conclusion: In this case the patient presented with HAM/TSP with a later superimposed uveitis. It is important to remember that ocular symptoms may be the initial or only manifestation of this infection. HTLV-1 uveitis is significantly increasing in metropolitan areas due to migration, becoming a relevant agent in differential diagnosis of patients with idiopathic uveitis. Corticosteroids are the treatment of choice.

EP-UVE-697

Swept-source optical coherence tomography angiography in rickettsial retinitis*Jelliti B., Ksiaa I., Kadri A., Khairallah M., Kahloun R., Khairallah M.,
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Purpose: To report optical coherence tomography angiography (OCTA) findings in a patient with rickettsial retinitis.

Methods: A 29-year-old man complaining of acute blurring vision in the right eye associated with *Rickettsia conorii* infection underwent a comprehensive ocular examination, fluorescein angiography (FA), spectral domain optical coherence tomography (SD-OCT), and swept source OCTA.

Results: Funduscopy showed two large areas of juxtavascular retinitis in the posterior pole with associated retinal hemorrhages, retinal edema, and serous retinal detachment. FA showed early hypofluorescence and late staining of white retinal lesions and associated adjacent retinal vascular leakage and optic disc hyperfluorescence. OCTA showed hypointense dark areas in the superficial capillary plexus and larger hypointense areas in the deep capillary plexus, outer retina, and choriocapillaris layer. The patient was treated with doxycycline and prednisone. Six weeks after presentation, retinal changes seen at the acute phase had resolved, leading to mild residual retinal pigment epithelial changes. FA showed retinal capillary nonperfusion within areas of resolved retinitis. SD-OCT findings included inner retinal atrophy, intraretinal cysts, and disruption of ellipsoid zone and interdigitation zone. Swept source OCTA showed well-delineated hypointense greyish areas of retinal capillary non-perfusion in both the superficial and deep capillary plexuses. Visual field testing revealed the presence of a corresponding paracentral defect.

Conclusions: OCTA may be a valuable noninvasive imaging technique for detecting and analyzing occlusive complications associated with rickettsial retinitis.

EP-UVE-698

Mycophenolate mofetil efficacy in chronic non-infectious uveitis*Lazicka-Galecka M., Galecki T., Kamińska A., Szaflik J.
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Purpose: To evaluate effectiveness, safety and corticosteroid-sparing potential of mycophenolate mofetil (MMF) in autoimmune uveitis.

Methods: A retrospective analysis of 42 patients diagnosed with refractory chronic inflammatory uveitis treated with MMF with a follow-up period of at least 18 months (18-48). Inclusion criteria: recurrent or poorly controlled disease despite steroids treatment >10mg of prednisone a day, for more than three

months, steroid intolerance or discontinued due to side effect, uveitis cases with poor prognosis requiring combined therapy of steroid and immunosuppressive drug.

The main outcome measures were: control of inflammation, corticosteroid-sparing potential, potency of preventing recurrence, side-effects.

Typically mycophenolate mofetil was administered orally.

Results: The mean time of IMT therapy was 24 months (range 18-48). At the start of MMF treatment mean dose of prednisolone was 32,6 mg of prednisolone (15 to 60 mg) which was reduced by 72,58%, to a mean dose of 8,9 mg (range 0-16). The total control of inflammation after 18 months was observed in 35 patients (85,3%). Corticoid sparing effect for ≥ 10 mg of prednisone a day was observed in 32 cases (78%). Corticoid sparing effect for ≥ 5 mg of prednisone a day was observed in 16 cases (39%). Total cessation of steroids was achieved in 4 patients (9,75%). After 18 months of therapy BVCA was improved from 0,26 to 0,63.

A MMF therapy was discontinued in 3 cases (7,3%), in 2 cases (4,87%) due to side effects, in one case due to patients pregnancy. The most frequently recorded side effect of MMF treatment were: gastrointestinal problems (13%), headache (4%), fatigue and muscle pain (3%), eczema (2%), most of which were transitory and did not force us to stop the MMF treatment or reduce the dosage.

Conclusion: Our data show that mycophenolate mofetil is generally effective and well tolerated in the treatment of chronic non-infectious uveitis.

EP-UVE-699

Posterior sub-tenon's triamcinolone acetonide as an adjunctive treatment of the intermediate uveitis macular edema

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Purpose: Analysis of the effects of the adjunctive posterior sub-Tenon's capsule triamcinolone acetonide injection (PSTI) in treatment of the intermediate uveitis with macular edema.

Methods: The study includes 30 eyes of 25 patients with multiple sclerosis who received a posterior sub-Tenon's injection of 40 mg / ml triamcinolone acetonide. Monitored parameters of efficiency are best-corrected visual acuity, intraocular pressure, central foveal thickness, fluorescein angiography score.

Results: The mean best-corrected visual acuity was significantly improved in the control visit 0.15 ± 0.10 logMAR compared to the baseline 0.40 ± 0.20 logMAR ($P < 0.05$). Six eyes showed the intraocular pressure spikes requiring a topical anti-glaucomatous treatment. The mean central foveal thickness (CFT) and the mean score of fluorescein angiography (FA) were significantly decreased from the baseline (CFT: 345 ± 50 μ m; FA mean score: 3.4 ± 1.0) compared with the twelve-week control visit (CFT: 219 ± 35 μ m; FA mean score: 1.6 ± 1.1 ; $P < 0.001$).

Conclusion: Posterior sub-Tenon's injection of triamcinolone acetonide statistically significantly improve visual acuity and decrease macular edema in patients with intermediate uveitis.

EP-UVE-700

Which is the most effective immunosuppressive therapy in non-infectious uveitis

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Purpose: To evaluate the efficacy of noncorticosteroid immunosuppressive treatment of noninfectious uveitis and to describe patients who were treated.

Design: Retrospective case series.

Methods: A retrospective review of medical records was completed for 57 non-infectious uveitis patients who received immunosuppressive therapy between January 2009 and December 2014. Three different immunosuppressive regimens were compared: the first one with mycophenolate mofetil (MMF), the second one with azathioprine and the third one where the immunosuppressive agent was replaced with different one (due to either ineffectiveness or side effects).

Results: Our study comprised 57 patients, with a mean age of $46,9 \pm 16,0$ years. The majority of patients were women (44 people, 77%). 61,4% (35) of our patients had bilateral disease. Disease duration prior to initiation of immunosuppressive therapy was $9,15 \pm 8,98$ years, half of the patients were suffering from the disease for 7 years. The treatment duration with immunosuppressant was 4 to 80 months, mean $25,1 \pm 18,9$ months. The probability of tapering the steroids to prednisone dose of ≤ 10 mg was 86% and was comparable among the groups.

There were no significant differences among the groups in terms of age, uveitis type and the median time to initiation immunosuppressive therapy.

There was a statistically significant difference in average therapy duration among the groups ($p < 0,001$). The difference was especially pronounced between group 3 (the longest therapy required) and group 1 (the shortest therapy duration) ($p < 0,01$)

The relapses were: the most frequent in Group 3 - 63%, the least frequent in Group 1 - 36%, and occurred in 50% in Group 2.

Conclusions: The most effective immunosuppressant in uveitis treatment was mycophenolate mofetil. Changing the immunosuppressive agent during therapy was associated with decreased success rate.

LATE BREAKERS

LB01: Education, Retina

LB-EDU-710

Evaluation of workplace-based clinical leadership training in a tertiary, university-affiliated Ophthalmology department in Madrid, Spain*González-López J.J.**Ramon y Cajal University Hospital, Ophthalmology, Madrid, Spain*

Purpose: Effective clinical leadership is associated with better care quality and patient satisfaction. We implemented and evaluated an introductory workplace-based clinical leadership training session in a teaching Ophthalmology department in Madrid, Spain.

Methods: An introductory, one-morning session on clinical leadership was held in March 2017. This session included large group discussion and small group reflection meetings. Topics included leadership styles, emotional intelligence and leadership dimensions. Course material was adapted from the NHS Leadership Academy. Participants evaluated the course's impact and quality using a post-course survey.

Questions were structured in five point likert scale (1 = strongly disagree; 3 = neither agree nor disagree; 5 = strongly agree), and responses were compared to the value 3 using one-way T-tests.

Results: Eighteen participants (9 men and 9 women) attended the course. Eight were ophthalmology residents, 8 consultants and 2 optometrists. Median age was 28 years (range 25 to 57). Only 3 (16.7%) participants had received previous formal clinical leadership training.

Participants overwhelmingly agreed that the course provided content relevant to their clinical responsibilities (4.67 ± 0.5 ; $p < 0.001$). Most participants also acknowledged that taking the course improved their knowledge on the dimensions of clinical leadership (4.78 ± 0.44 ; $p > 0.001$), and their ability to solve problems in their teams (4.11 ± 0.78 ; $p = 0.003$). All of the participants would recommend workplace-based clinical leadership training to their colleagues (4.78 ± 0.44 ; $p > 0.001$), and think that clinical leadership should be part of the curriculum of ophthalmology trainees in Spain (4.89 ± 0.33 ; $p > 0.001$)

Conclusion: A short, introductory clinical leadership course for ophthalmologists designed by colleagues resulted in significant self-reported improvements in clinical leadership competencies.

LB-RET-711

Coexistence of CSR & DR : a diagnostic dilemma*Verma A.**Dr Agarwals Eye Hospital, Anterior Segment & Cornea, Indore, India*

Introduction: Diabetic retinopathy and Central serous retinopathy are 2 distinct entities, with difference in age of presentation, etiopathogenesis and clinical features, but when occurring together, can be a diagnostic dilemma and requires careful evaluation.

Material and methods: Case study of 3 patients with long standing diabetes (>15yrs) and features of CSR at Bangalore West Lions Superspeciality Eye Hospital, Bangalore.

Conclusion: Even though diabetic retinopathy and CSR have different pathologies, they can coexist. The reason for coexistence could be the following: A patient with CSR as a young adult could develop DR in later years. Stress could be the contributing factor in older patient with diabetes.

Stress could be common factor for both, as it is one of the important factors in pathogenesis of Maturity Onset Diabetes Miletus (MODY).

In any situation, a careful evaluation is necessary to differentiate the cause of fundus picture, as treatment differs for the two diseases.

LB-RET-712

Longterm real-life clinical practice outcomes of dexamethasone intravitreal implant in previously untreated irvine-gass syndrome abstract*Guclu H., Pelitli Gürlü V., Özal S.A., Kinyas S.**Trakya University Faculty of Medicine, Ophthalmology, Edirne, Turkey*

Purpose: To demonstrate the long term safety and efficacy of intravitreal dexamethasone implant in previously untreated IGS in real life clinical practice.

Materials and methods: This is a retrospective real life study in which 18 eyes of the 18 patients with Irvine-Gass syndrome after phacoemulsification with posterior chamber IOL implantation between January 2014 and November 2016. None of the patients used treatment before intravitreal dexamethasone implant. Best-corrected visual acuity (BCVA) with Early Treatment Diabetic Retinopathy Study (ETDRS) chart, slit-lamp, intraocular pressure (IOP) measurement, fundus examination and spectral-domain optical coherence tomography and fundus fluorescein angiography. Ophthalmological examination was repeated at every visit at week 1, months 1, 3, 6 and 12 for all patients.

Results: The baseline BCVA of the patients was 17.8 ± 16 ETDRS letters, the mean BCVA was 45.9 ± 10 ETDRS letters at month 12 after treatment. The baseline CMT was 522.6 ± 120 μ m and the mean CMT was 248 ± 24 μ m at month 12. there was a statistically significant relation between presence of complications and final BCVA ($p = 0.004$). Patients who had complicated surgery had higher CMT values than the other patients but it was not statistically significant ($p = 0.09$). There was no statistically significant correlation between the duration of IGS and final BCVA ($r = -0.2$ $p = 0.38$) and final CMT ($r = 0.12$, $p = 0.61$).

Conclusion: In real life clinical practice one year outcomes of intravitreal dexamethasone implant showed that the intravitreal dexamethasone implant could be the first step treatment in previously untreated IGS patients to reduce the risk of resistance and to eliminate irreversible injury to macula.

Key words: Intravitreal dexamethasone implant, Irvine-Gass syndrome, cystoid macular edema, phacoemulsification, inflammation

LB-RET-713

Clinical manifestation and progressive sensorineural hearing loss in the patients with retinitis pigmentosa*Cheleva Markovska V.¹, Jakimovska D.²**¹University Ss Cyril and Methodius, University Eye Clinic, Skopje, Macedonia, the Former Yugoslav Republic of, ²University Ss Cyril and Methodius, University ORL Clinic, Skopje, Macedonia, the Former Yugoslav Republic of*

Retinitis pigmentosa is a hereditary disorder characterized by progressive loss of photo receptors and retinal pigment epithelial function.

Aim: Prospective examination of the patients with RP and retrospective examination of medical records of patients with retinitis pigmentosa.

Material and method: Typical familiar presentation of the disease (9 patients) and sporadic cases (15 patients) were examined from January 2006 to December 2016. Most of the cases are still following in the Clinic for eye

disease in Skopje. The visual acuity, slip lamp and fundus examination, visual field, FFA, red cam investigation and OCT of the posterior segment were done in some of the patients. In 24 patients, condition of the hearing was studied with vestibular analyzation.

Results: Clinical symptoms, FFA angiogram, OCT slides and visual fields results are discussed. The arterial attenuation, retinal bone-spicule pigmentation and waxy disc pallor were present in all patients. Other ocular features include the following: drusen of the PNO 33%, posterior sub capsular cataract 81%, keratoconus 54%, myopia 83%, open-angle glaucoma 37,5% and vitreous opacification 66%. Neural sensorial hearing loss was noticed in 60% of the patients. RP patients with hearing loss have alteration of vestibular function of peripheral type in 80% and mixed type in 20%.

Discussion: Visual prognosis depends of involvement of the macula-maculopathy and opacification of the lens. Almost half of the patients with RP have social inadequate hearing (45% in our study)

Conclusion: Dissolving the ocular complication and continuous following of the patients with retinitis pigmentosa is important for saving the vision acuity. Importance of examination of visual functions in cases of neurosensory hearing loss of unknown genesis is underlined.

LB-RET-714

The incidence of ocular tuberculosis in Australia over the past 10 years (2006 -2015)

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Purpose: To determine the incidence and clinical phenotype of ocular tuberculosis in Australia (a non-endemic country for tuberculosis) based on the mandatory jurisdictional health notification records for TB.

Method: A whole population retrospective case series (Australia). Patients diagnosed with ocular tuberculosis were identified over the past 10 years (1st January 2006 to 31st December 2015) as recorded by individual Health Department jurisdictions per mandatory health notifications. The incidence rates were calculated based on the available Australian census data. Incidence rates were age and sex standardised.

Results: 162 cases of ocular tuberculosis were identified across Australia over a 10- year time period. Of these, 156 participants were overseas born. The ten-year Australian incidence of ocular tuberculosis was 0.77 per 100,000 people. Following age and sex standardization the highest 10-year incidence was observed among men aged 30-39. While there has been a downward trend in overall TB annual incidence rates from 2010-2015, over the same period the annual incidence of ocular TB has increased compared to the four previous years. Descriptive clinical data regarding the ocular manifestations of TB was available in 73/157 patients. In these 73 patients the commonest manifestations of ocular TB were unspecified uveitis (50.1%), focal, multifocal or serpiginous choroiditis or chorioretinitis (12.3%) and retinal vasculitis (11.0%). Of patients with ocular TB, 4/162 (2.47%) had associated pulmonary TB and 8/162 (4.94%) had associated systemic (non-pulmonary) TB. Systemic anti-TB therapy was administered to 161 patients.

Conclusion: This is the first Australian study to report the incidence rate of ocular tuberculosis.

LB-RET-715

Measurement of foveal avascular zone (FAZ) dimensions in healthy subjects using Heidelberg optical coherence tomography angiography

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Purpose: To demonstrate the FAZ in the four retinal vascular layers delineated by the Heidelberg optical coherence tomography angiography (OCTA) machine and measure the interobserver variability in measurement of FAZ dimension.

Methods: Both eyes of healthy volunteers were examined using the Heidelberg OCTA. The generated images were analyzed using ImageJ software. Two graders measured the FAZ area in each layer (superficial vascular plexus (SVP), deep vascular plexus (DVP), nerve fiber layer (NFL), ganglion cell layer (GCL), IPL-INL - from the IPL to the inner nuclear layer (INL), and INL-OPL - from the INL to the outer plexiform layer (OPL). Each measurement was completed three times by each grader.

Results: Forty-seven eyes of 25 subjects were included in the study. The FAZ area was not clearly delineated in the NFL and GCL layers, and therefore was not measured. The mean FAZ area in each layer (mm²) was 0.323 ± 0.1, 0.323 ± 0.1, 0.316 ± 0.1, 0.326 ± 0.1 for the SCP, DCP, IPL-INL, and INL-OPL layers, respectively.

There was a high level of agreement between measurements of FAZ size of the different layers (intraclass correlation coefficient (ICC) 0.996-0.999) There was no statistically significant difference between fellow eyes in the FAZ size of each layer. The interobserver agreement between graders and the intraobserver agreement between measurements for each grader were high (ICC > 0.98, ICC ≥ 0.998, respectively).

Conclusion: The new Heidelberg OCTA machine allows more segmentation options for retinal vascular layers than was previously available with other devices. In healthy patients, there was a very high correlation between FAZ sizes among the different layers. Further studies on pathologic conditions are required to assess the significance of the additional segmentation options.

LB-RET-716

Effects of a Rho kinase inhibitor on the sequential expression of iNOS, ERK ½, p-NF-κB, MCP-1 and VEGF in the retina of mice with diabetes.

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Purpose: The present study aims to investigate the effects of blocking the Rho kinase pathway in the retinas of diabetic mice by observing the sequential expression of Inducible nitric oxide synthase (iNOS), Extracellular signal-regulated kinases1&2(ERK ½), phosphorelated nuclear factor kappa-light-chain-enhancer of activated B cells (p-NF-κB), Monocyte Chemoattractant Protein-1 (MCP-1) and Vascular endothelial growth factor (VEGF) expression following the administration of the Rho kinase inhibitor, fasudil (FSD).

Method: This study was conducted on retinas extracted from 1-month diabetic mice and human retinal Müller glial cells (MIO-M1) which were stimulated with high- glucose. Western blot analysis and enzyme-linked immunosorbent assay were utilized to study the effect of the Rho kinase inhibitor, fasudil (FSD), on high-glucose-induced upregulation of ROCK-1, MCP-1, and VEGF in Müller cells and on ROCK-1, iNOS, ERK ½ and p-NF-κB expression in the retinas of diabetic mice (n=7-10 in each group).

Results: Treatment of human retinal Müller cells with high-glucose induced significant upregulation of ROCK-1, MCP-1 and VEGF in these cells. Nevertheless, Fasudil co-treatment normalized the high-glucose-induced upregulation of ROCK-1, MCP-1 and VEGF in Müller cells. Similarly, our data showed that diabetes upregulated ROCK-1, iNOS, ERK ½ and p-NF-κB expression in the retinas of diabetic mice whereas the use of ROCK inhibitor (FSD) attenuated this diabetes-induced upregulation of ROCK-1, iNOS, ERK ½ and p-NF-κB in the retinas of diabetic mice.

Conclusion: This data provides evidence that Rho kinase activation influences the induction of inflammatory mediators in diabetic retina, thus, suggesting that Rho kinase inhibitor, fasudil, can be a novel therapeutic target in diabetic retinopathy treatment.

Keywords: Diabetic retinopathy, Inflammation, ROCK-1, fasudil.

LB-RET-717

The Charles Bonnet syndrome in patients with neovascular-age related macular degeneration: association with proton pump inhibitors

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Purpose: The occurrence of visual hallucinations in psychologically healthy people - the Charles Bonnet Syndrome - is often associated with visual loss. We investigated the role of oral proton pump inhibitors (PPIs) use and other potential risk factors in a population of neovascular age-related macular degeneration (AMD) patients.

Methods: Five hundred consecutive patients with neovascular-AMD followed at a single tertiary center in Portugal were screened for CBS. Psychiatrically healthy individuals were systematically asked if they had previously experienced hallucinations, patients that fit the selection criteria were included in the CBS group and those who did not report hallucinations were included in the non-CBS group. Demographic data, current medication and ocular risk factors were collected and compared between CBS and non-CBS groups.

Results: The prevalence of CBS was found to be 9.0% (45/500). Using a binary logistic regression model, correlations were found between older age (p=0.002), PPI intake (p=0.022), poor visual acuity (p=0.004) and the development of CBS. The increased risk for visual hallucinations caused by PPIs was independent of age (p=0.598) or visual acuity (p=0.739). For this model, the area under the curve was 0.770.

Conclusion: The prevalence of CBS in neovascular-AMD patients is high and mainly affects older individuals with poor visual acuity. PPIs seem to increase the risk of development of hallucinations independently of the degree of visual loss.

LB-RET-718

Efficacy and safety of repeated dexamethasone intravitreal implant in young phakic patients with macular edema related to branch retinal vein occlusion; 24 months follow up

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Purpose: To evaluate the efficacy and safety of repeated (two or more) dexamethasone intravitreal implant (DEX Implant 0.7 mg, [OZURDEX®, Allergan Inc. USA]) in young phakic patients with branch retinal vein occlusion (BRVO).

Method: Non comparative-retrospective study of 24 months duration, to evaluate the safety and efficacy of repeated (two or more) DEX implant in 7 young phakic patients with macular edema related to BRVO, in our usual clinical practice, in a single-center institutional setting; the “Complejo Hospitalario Universitario de Canarias” (CHUC). Best corrected visual acuity (BCVA), central macular thickness (CMT) and intraocular pressure (IOP) were assessed. Subsequently, a statistical analysis of the data (Wilcoxon test) was performed.

Results: Patients received 2 to 4 (mean, 2,7) DEX implants as monotherapy (42.8% of patients) or with adjunctive treatments/procedures. Mean duration of macular edema before first DEX implant was 27,8 days. Three patients were naive and the rest received any adjuvant treatment with laser or ranibizumab. In all patients studied there was a statistically significant improvement in mean BCVA, from 60.71 to 80 ETDRS letters (p = 0.024), and in the mean GMC, from 523,71µm to 299µm (p = 0.046).

All the patients achieved ≥2-line best-corrected visual acuity improvement at month 24. Three patients had increased IOP> 30 mmHg but all responded to topical treatment. Cataract surgery was performed during the study period in 2 patients at the discretion of the physician, although one of them had lens opacity recorded as Grade 2 at baseline.

Conclusion: In our “real world setting”, BRVO in young phakic patients treated with multiple DEX implant injections, either alone or combined with other therapies, had improved central retinal thickness and visual acuity with each subsequent injection. No new safety concerns developed with multiple implants.

LB-RET-719

Evaluation of 3D visualization system in vitreoretinal and cataract surgery

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Purpose: To evaluate the use of novel 3D visualization system in vitreoretinal and cataract surgery.

Method: In this study we included all patients operated upon at the Vitreoretinal Section, Department of Ophthalmology, Drammen Hospital, Norway during a two-month period. Surgery was performed with 25G or 27G pars plana vitrectomy, combined with phacoemulsification and scleral buckling where needed.

All surgeries were performed with the Constellation vitrectomy system (Alcon). The Ngenuity 3D visualization system (Alcon) was used during all procedures.

Factors evaluated included the learning curve in the utilization of the camera system on both anterior and posterior segment surgery, surgical ease and reduction of back strain for the surgeon, the use of reduced endoillumination intensity and use of various color filters, the simultaneous observation of the surgical field by all members of the surgical team, the simultaneous projection possibility of clinical exams, surgical duration and a cost-benefit analysis.

Results: The 3D visualization system scored positively in regards to learning curve, reduction of back strain, reduced illumination and phototoxicity. Simultaneous view by the surgical team increased team coherence, learning and employee engagement. Color filters were not found to significantly alter the surgical view. Simultaneous projection possibility of clinical exams is still under development. View during cataract surgery was found to be inferior to that of the microscope. The economic cost is a factor that needs to be appreciated.

Conclusion: 3D visualization systems broaden our surgical horizons and increase patient and surgeon safety. The current systems give better surgical view during posterior segment surgery than phacoemulsification.

LB-RET-720

MEK inhibitor-associated retinopathy in metastatic melanoma

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Purpose: To report the clinical characteristics and clinical course of mitogen-activated protein kinase (MEK) inhibitor-associated retinopathy in four patients with advanced cutaneous melanoma.

Method: We observed 4 patients (3 males and 1 female) with metastatic melanoma who were treated with MEK inhibitor cobimetinib in combination with BRAF inhibitor vemurafenib. Their age ranged from 40 to 73 years (mean: 58 years). All patients were symptomatic, describing blurred vision or a circle in the center of the visual field. All underwent regular ophthalmological examinations including determination of visual acuity (VA), intraocular pressure, biomicroscopy, dilated funduscopy, infrared-reflectance (IR) imaging and optical coherence tomography (OCT).

Results: Symptoms occurred during the first week after starting the therapy with MEK inhibitor; they were mild and transient. With funduscopy small circular yellowish lesions were observed. IR imaging revealed a hyperreflective center, surrounded by a hyporeflexive zone. On OCT, dome-shaped accumulation of subretinal fluid (SRF) was detected in all patients. The lesions were multifocal and scattered throughout the posterior pole in 3 patients, one patient had only foveal lesion in both eyes. OCT findings showed fluctuations in SRF in all patients during the following cycles of therapy.

Conclusion: A reversible serous neurosensory retinal detachment develops in patients treated with MEK inhibitor in combination with B-raf inhibitor. Physicians need to be aware of this common and often transient side effect to avoid needless intervention, including the discontinuance of a potentially life-prolonging therapy.

LATE BREAKERS

LB02: Cataract, Contact Lenses, Cornea, Ocular Surface, Neuro-ophthalmology

LB-COR-721

Visual and clinical outcome in patients with corneal lacerations

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Background: In industrialized nations, corneal lacerations are one of the most common reason for hospitalization. As only limited follow up studies exist, this was designed to study visual & clinical outcome in patients presenting with full thickness corneal lacerations & to ascertain impact of various factors influencing prognosis after repair.

Methods: A prospective, non-randomised observational study of 35 patients with full thickness corneal lacerations admitted to B.W Lions Superspeciality eye hospital between September 2010 to October 2012 was done. Demographic data retrieved included patient's age and sex. Detailed history was taken. Examination included initial visual acuity (Snellen's acuity), clinical signs & were followed up to 3 months.

Results: Patients were mostly male (82.8%) and in third decade (57.1%). Most of the patients (77.2%) within 24hrs of injury. Injuries at work were the most common & metallic objects were more commonly found. These injuries were mostly penetrating in nature. The extent of injury included mostly half or less than half of cornea (54.3%). Lens damage (45.7%), hyphema (40%) and vitreous hemorrhage (37.1%) were most commonly associated. Posterior segment complications like retinal detachment and endophthalmitis were seen in 8.5% and 2.8% cases respectively. All the patients underwent primary repair within first 24 hours of presentation. Additional surgical interventions were done for 48.6% patients in the follow up period of 3 months. At 3 months, 74.3% had a good visual outcome of < 20/70. About 5.7% of patients had no perception of light.

Conclusion: In conclusion, various demographic and preoperative factors like age, time of presentation, vision at presentation, length of corneal wound, involvement of visual axis, associated ocular features like hyphaema, lenticular changes, vitreous haemorrhage and retinal detachment are significant prognostic indicators for final visual outcome.

LB-COR-722

Determinants of postphacoemulsificative corneal endothelial cell density.

Systematic review- metaanalysis

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Papers 1994-2016 year

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Purpose: Corneal endothelial cell loss is a side-effect of cataract surgery that may potentially have severe impact on patients' postoperative visual acuity. There is a necessity to determine the risk of clinically important decrease of endothelium density, which may support ophthalmologists with better risk management and evaluation. In spite of an improvement of operational technique, some patients have a tendency to have a greater postphacoemulsificative corneal endothelial cell loss. Addressing these issues including proper selection of these patients, the perioperative period management and modifi-

cation of operational technique may significantly reduce the rate of endothelial cell loss, and thus further enhance the short and long period visual acuity of patients undergoing cataract surgery.

Method: Systematic review based on accessible Polish, German and English databases, analyzing hundreds of articles and counting correlation. For the purpose of study metaanalysis of prospective studies was used. For statistical calculations program Statistica 12 was used.

Results: Corneal endothelial cell loss in most of the published studies was influenced by: hardness of cataract, age of the patient, size of incision, anterior chamber depth and the experience of the surgeon.

Conclusion: Little corneal endothelial cell loss is important factor in achieving success in cataract surgery.

LB-COR-723

Femtosecond laser-assisted refractive autokeratoplasty in advanced keratoconus: new surgical technique and results

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Purpose: Development of a new surgical technique for treatment of advanced keratoconus with the use of femtosecond laser.

Method: 32 patients with advanced keratoconus were included in the study, mean age 31.8 ± 9.9 y.o. Femtolaser-assisted refractive autokeratoplasty (FRAK) was performed with the use of «IntraLase 60 kHz».

Results: Significant improvement both mean UCVA and mean BCVA was observed. In 84.4% of cases the increase was 2 lines or more. In 37.5% (6 of 12 eyes undergone crosslinking after FRAK) the increase of UCVA varied from 3 to 5 lines. Mean UCVA changed from 0.07 to 0.35, BCVA increased from 0.13 to 0.9 ($p < 0.05$). Ks decreased to 55.2 ± 2.6 D, Kf became 48.3 ± 2.8 D, the cylindrical component decreased to 4.7 ± 2.69 D. Endothelial cell density was stable with mean value 2650 c/mm^2 .

Conclusion: FRAK is a new effective technique for treatment of advanced keratoconus. The benefits of this technique are following: the use and improvement of optical capacity of patient's cornea, improvement both UCVA and BCVA; non-penetrating nature of the operation helps to minimize the risks of surgical treatment; this method leaves the potential for corneal transplantation.

LB-COR-724

Comparing outcomes of femtosecond laser-assisted cataract surgery to phacoemulsification cataract extraction in patients with fuchs endothelial dystrophy

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Purpose: Fuchs Endothelial Dystrophy (FED) causes progressive loss of corneal endothelial cell density (ECD), along with secretions from abnormally thickened Descemet's membrane, resulting in guttata formation.

Femtosecond laser technology compared to traditional phacoemulsification cataract extraction (PCE), requires less effective energy and time to emulsify the lens. Thus, it may prove to be beneficial by decreasing the amount of ECD loss, which is especially crucial for patients with FED.

In this retrospective study, we aim to compare the outcomes of patients with FED who underwent Femtosecond Laser-Assisted Cataract Surgery (FLACS) with those who underwent PCE by studying the corneal changes.

Method: From 2013 to 2016, 53 eyes (46 patients) with cataracts of all densities had available pre-operative and post-operative parameters for analysis. These eyes underwent either FLACS or PCE. Best-corrected visual acuity, corneal changes, corneal thickness (CT) and ECD were analysed using specular microscopy, before and after surgery, over a mean of 11 months.

All statistical analyses were performed using IBM SPSS Software version 20.0.

Results: Females and Chinese constituted 73.9% and 78.3% of the FED patients respectively. Approximately half of the eyes underwent FLACS.

The mean loss in ECD for patients who underwent FLACS was $161.9 \pm 564.9 \text{ cells/mm}^2$, and $538.2 \pm 403.8 \text{ cells/mm}^2$ for those who underwent PCE ($p=0.027$). The mean percentages of ECD were $2.8 \pm 36.3\%$ for FLACS and $24.1 \pm 16.1\%$ for PCE patients ($p=0.025$).

The mean increase in CT was $12.4 \pm 31.7 \mu\text{m}$ for FLACS and $14.5 \pm 22.1 \mu\text{m}$ for PCE patients ($p=0.796$). The mean percentages of CT increase were $2.5 \pm 6.1\%$ for FLACS patients and $2.9 \pm 4.4\%$ for PCE patients ($p=0.772$).

Conclusion: Our data shows that FLACS significantly decreased the amount of ECD loss compared to PCE and is beneficial to patients with FED. This alternative could be recommended to FED patients to reduce risk of corneal decompensation.

LB-COR-725

Keratopathy neurotrophic: diagnosis, therapeutic challenge, herpetic recurrence and therapies new role

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Purpose: Our purpose is to report a challenging case of a Neurotrophic keratopathy (NK).

Methods: A 74 years old woman reported for a left (OS) red-eye associated with discomfort, photophobia and low visual acuity (VA) with 1 month evolution. She was subjected to ophthalmic examination. We documented with a series of anterior segment photography.

Results: She had a VA OS = fingers count, ciliary hyperemia, corneal ulcer with 3mm diameter with smooth edges on the visual axis, diffuse stromal edema with Descemet folds and neovascular pannus. The patient began treatment with fortified eye drops (Vancomycin, Cefazidime). After 3 days

of hospitalization there was no improvement frame. The corneal sensitivity tested with cotton swab was decreased in OS and the frequency of blinking was recorded at 6 times per minute. The funduscopy of her right eye revealed non-proliferative diabetic retinopathy. We suspended fortified eye drops and started Doxycycline, Moxifloxacin eye drops and ocular lubricants preservative-free. After 8 days there was improvement of the frame. 13 days later the patient had a worsening of symptoms and an increase in the epithelial defect, stromal edema, fine tyndall in AC an inferior keratic precipitates. The oftalmotonus was high. We added to the already established therapy: Acyclovir, subconjunctival injections of Dexamethasone and Cacicol® - RGTA®, (Polycarboximetilglucose sulfate). After 35 days of observation there was complete epithelial regeneration.

Conclusion: NK is one of the most difficult and challenging ocular disease that lack a specific treatment. The prognosis depends on the cause and severity of the trigeminal damage and on the presence of associated ocular surface disease. In our patient, clinical evidence seems to show that topical treatment with RGTA® drops improve the final outcome of the disease. New and different clinical trials will be encouraged to define the best therapeutic standard.

LB-COR-726

Accelerated corneal collagen crosslinking (CXL) versus conventional corneal CXL for progressive keratoconus

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Purpose: To compare the outcomes of accelerated corneal collagen crosslinking (CXL) and conventional corneal crosslinking for progressive keratoconus.

Method: Patients were divided into two groups as the accelerated CXL group and the conventional CXL group. Eyes with progressive keratoconus had accelerated CXL (KXL system Avedro System; 10 minutes riboflavin, Vibex Rapid, presoak; 8 minutes 30 mW/cm², 7,2 mJ ultraviolet-A UVA light, puls 1 sec on, 1 sec off) or conventional CXL, 30 minutes riboflavin Vibex, presoak; 30 minutes 3 mW/cm² UVA light). The postoperative changes in visual acuity, keratometric values, morphologic changes in the cornea, demarcation line existence, with accelerated CXL and conventional CXL were compared. The follow-up was 9-12 months.

Results: The study enrolled 24 eyes of 19 patients, 16 eyes had accelerated CXL, and 8 eyes had conventional CXL. The mean UDVA and CDVA were better at the six month postoperative when compared with preoperative values in two groups. There were no statistically significant differences in postoperative changes in uncorrected or corrected distance visual acuity or in the manifest refraction spherical equivalent between the 2 procedures. There were also no statistically significant differences in the postoperative changes in the keratometric value and mean corneal power between the procedures. Similar morphologic changes and a pronounced demarcation line were apparent in eyes in both groups postoperatively.

Conclusion: Accelerated and conventional CXL were both safe and effective. Refractive and visual results of the accelerated CXL method and the conventional CXL method for the treatment of progressive keratoconus were similar. Accelerated CXL, being a fast procedure, appears to be more beneficial for patients and surgeons.

LB-OSC-727

The relationship between tear film osmolarity and ocular surface structure and function

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Purpose: To evaluate the effect of tear film osmolarity on the repeatability of keratometry (K) values and on visual function.

Method: All patients from the outpatient department were invited to participate. Visual function using a Bailey-Lovie chart and Pelli-Robson contrast chart was performed. The SPEED questionnaire was used. Tear osmolarity (TearLab) was recorded on each subject and again repeated three weeks later. Participants were prospectively placed in groups based on osmolarity (≥ 316 mOsm/L; hyperosmolar, < 308 mOsm/L; normal).

Baseline K readings were recorded on two occasions also (IOLMaster). Variability in average K, calculated corneal astigmatism, IOL power and contrast sensitivity function was compared between groups.

Results: Data was collected on 50 eyes. Twelve eyes showed normal osmolarity whereas thirty-three were hyperosmolar. Osmolarity measurements were shown to be repeatable ($P=0.27$). Repeat osmolarity and keratometry measurements do not show a statistically significant linear relationship ($P>0.05$). There is no correlation between osmolarity and change in astigmatism with repeat measurements ($R=-.015$).

Fifteen eyes were shown to have a difference in final lens calculation of 0.50 Dioptres. Of these, fourteen were shown to be hyperosmolar.

Half the participants reported dry eye symptoms. Of the normal osmolarity group eight (66.67%) did not report symptoms while twenty (60.61%) in the hyperosmolar group reported dry eye symptoms.

Osmolarity and contrast sensitivity do not have a statistically significant linear relationship ($P>.05$). The direction of the relationship is weakly positive; ($R=.238$).

Conclusion: A high proportion of participants in the random sample had hyperosmolar tears. Measurement of tear osmolarity prior to cataract surgery can effectively identify patients with a higher likelihood of unexpected refractive error. Treating the hyperosmolar subgroup would increase the accuracy of biometry. Visual function is affected by osmolarity.

LB-OCS-728

The correlation between tear osmolarity, reflex tear flow and subjective symptoms of the dry eye disease in early post operative period after cataract surgery

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Purpose: To evaluate the correlation between the tear film osmolarity (TFO), reflex tear flow (RTF) and subjective symptoms of dry eye disease (DED) after cataract surgery.

Method: A prospective, non-randomized, single center, case series study was done in Pauls Stradiņš Clinical University Hospital from November 2016 to February 2017. 20 patients without any concomitant systemic and eye diseases, that are evidence based to increase TFO, and who underwent cataract surgery, were included in the study, examined and interviewed one week after cataract surgery. TFO in the operated eye was measured using TearLab Osmolarity System. RTF was performed with Schirmer test I. The subject-

tive symptoms were estimated according to ocular surface questionnaire form, evaluated specially for this study. Collected data were analyzed using Microsoft Excel 2010 and IBM SPSS 22.0.

Results: The study included 20 eyes of 20 patients, 13 (65%) of them were females, 7 (35%) were males. The mean age was 72.5 ± 10.2 (\pm SD) years. Mean TFO among patients (n=20) was 302.00 ± 14.65 mOsm/L. Mean RTF was 14.45 ± 8.91 mm. There were no statistically significant connection ($p=1.000$, Fisher's Exact Test) and no statistically significant correlation ($r=-0.105$, $p=0.662$, Pearson's Correlation Coefficient) between TFO and RTF.

15 (75%) patients had at least 1 to 6 subjective symptoms of DED. Among them (n=15) were 4 (27%) patients with TFO >308 mOsm/L and 5 (33%) patients with RTF < 10 mm. There was no statistically significant connection between subjective symptoms and TFO ($p=0.530$, Fisher's Exact Test) and between subjective symptoms and RTF ($p=1.000$, Fisher's Exact Test).

Conclusion: The study results demonstrate no statistically significant correlation between symptoms of the DED and objective measurements of TFO and RTF in the early postoperative period after cataract surgery. Also there were no statistically significant connection and correlation between TFO and RTF in this study.

LB-CAT-729

A mobile high-frequency low energy femtosecond laser for pediatric cataract surgery

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Purpose: To describe the use of a new mobile, high-frequency, low-energy femtosecond laser platform in performing cataract surgery in 2 children with familial congenital cataracts.

Method: This is a prospective case series. After receiving ethics committee approval, 2 children with bilateral familial cataracts were recruited. Procedures were performed in a normal operating room without any adaptations. The femtosecond laser was wheeled in and set up one hour prior to the first case. After general anaesthesia was induced, the patient was prepped and draped in the routine sterile manner. The laser was manoeuvred and docked to the eye with a liquid-filled interface. Laser anterior capsulotomy was immediately followed by lens aspiration and intraocular lens insertion. Pre- and post-operative corrected distance visual acuity (CDVA) and incidence of any complications were collected.

Results: Median pre-operative CDVA was 0.47 (range 0.44 - 0.64) LogMAR. All 4 eyes had uncomplicated surgery. Laser docking was successful without the need of canthotomy. Laser anterior capsulotomies were free-floating in all cases, with no evidence of tags or tears. At 3 month post-surgery, median CDVA was 0.13 (0.04 - 0.28) LogMAR. In all cases, intraocular lens was centered and the edge of the optic was covered all round by the circular capsulotomy.

Conclusion: This mobile, high-frequency low-energy femtosecond laser platform can be used in children with minimal alternation to routine surgical flow. Its ability in creating circular anterior capsulotomy removes one of the major obstacles in pediatric cataract surgery, thus its use may improve the quality and consistency of this procedure in the future.

LB-COL-730

Success of mini scleral rigid gas permeable contact lens fitting in keratoconus

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Purpose: To share one year's experience with mini rigid scleral gas permeable (RSGP) contact lenses in patients with Keratoconus and evaluate visual and comfort outcomes.

Materials and methods: 23 eyes of 13 patients from 14 to 53 years old, mean age of 36, 8 women (62%) and 5 males (38%) with diagnosis of Keratoconus, were fitted with mini rigid scleral gas permeable contact lenses of RofluoconD, Dk 100 and 15.00 mm of diameter. Their follow-up, during one year, included serial visual acuity (VA) evaluation and symptoms documentation.

Results: There was improvement of comfort and tolerance in all the patients. There was also a significant increased in visual acuity ($p < 0.05$) from 0.4 (range 0.05 - 0.8) before and 0.8 (range 0.4-1.0) after mini RSGP contact lens fitting (values in decimal scale).

Conclusion: The present RSGP contact lenses take place in the medical treatment of Keratoconus. They improved visual acuity and comfort over other treatments in and may allow a delay in surgical options. We assume that these contact lenses can be used in other irregular astigmatism, such as post refractive surgery ectasia.

LB-NEO-731

Abstract has been withdrawn.

LATE BREAKERS
LB03: Glaucoma

LB-GLA-742

Long-term outcomes of trabeculectomy undertaken within the first 2 years of life for primary congenital glaucoma*Drucka E.^{1,2}, Valeina S.^{1,3}, Viksnins M.³, Sperga V.³, Treija A.³, Baumane K.^{1,2}, Laganovska G.^{1,2}*¹Riga Stradins University, Riga, Latvia, ²Pauls Stradins Clinical University Hospital, Riga, Latvia, ³Children's Clinical University Hospital, Riga, Latvia**Purpose:** To evaluate the long-term effectiveness of trabeculectomy undertaken for the management of primary congenital glaucoma (PCG).**Methods:** Retrospective, consecutive case series of 16 patients under age of 2 years diagnosed with PCG in the single university hospital from January 2000 till December 2016. The medical records of 24 consecutive eyes of 16 patients were reviewed and analyzed. All surgeries were done by single surgeon.**Results:** The study was composed of 24 eyes of 16 patients over mean follow-up period of 75.0 months (range, 8 to 162). Among the patients, 43.75% were females and 56.25% were males. On the time of surgery, the mean age of the patients was 9.06±5.34 months.

Half of the patients presented with bilateral PCG and other half with unilateral PCG. The mean preoperative IOP was 25.13±5.2 mm Hg.

At the final follow-up visit, the average IOP was 14.82±5.14 mm Hg with the mean IOP reduction of 41.02% from the preoperative baseline. Fourteen (58.33%) of 24 eyes were considered as successful at the last follow-up with effective surgical treatment. Seven (29.17%) of eyes received additionally topical antiglaucoma eye drops with successful IOP control, in 85.7 % of these cases combined treatment of 2 types of drugs were applied. Three (12.5%) of eyes had mean IOP over 21 mm Hg (mean value 24.5±0.5) after applied surgical treatment and topical medication.

In the study, final overall visual acuity outcomes of 41.18% obtained 20/40 or better, 88.24% - 20/200 or better, and no loss of light perception was determined. Amblyopia was diagnosed in 43.75% of patients, astigmatism - in 75% of eyes with mean value of -0.71±2.81 diopters.

Conclusions: The surgical treatment showed a good IOP-lowering effect on bilateral and unilateral PCG at the final follow-up visit with mean IOP reduction of 41.02% from the baseline value.

In most of cases (87.5%) trabeculectomy in a combination with topical medication or without demonstrated successful outcome.

LB-GLA-743

Intraoperative evaluation of episcleral venous fluid wave during gonioscopy assisted transluminal trabeculectomy*Aktas Z., Ozmen C., Atalay H.T., Ucgul A.Y.**Gazi University Medical Faculty, Ophthalmology, Ankara, Turkey***Purpose:** To investigate the relationship between the extent of episcleral venous fluid wave (EVFW) and the surgical outcomes of gonioscopy assisted transluminal trabeculectomy (GATT).**Methods:** 37 eyes of 31 patients were included. The extent of EVFW (clock hours) was evaluated in a masked fashion. Correlations between the extent of EVFW and the surgical outcomes of GAAT as determined by intraocular pressures (IOP) and postoperative medication needs were investigated. The impact of preoperative maximum IOP on EVFW was also evaluated.**Results:** There was a significant correlation between IOP and the extent of the EVFW at 1st, 3rd, 6th and 12th months follow-up visits. On the other hand, correlation between preoperative maximum IOP and the extent of the EVFW was also detected but it was not statistically significant. 11 of (%29.7) 37 eyes required medications after the surgery. Mean extents of EVFW in patients who needed and did not need medications during follow-ups were 2.8±1.1 (1-4) and 4.9±2.2 (1-8) respectively and the difference was statistically significant.**Conclusion:** The extent of EVFW might be a valuable finding and a clinical prognostic indicator for the surgical success of GATT since circumferential trabeculectomy is performed in this surgical technique making all collector channels accessible.

LB-GLA-744

Isnt rule applicability based on optical coherence tomography parameters in a normal portuguese population*Barata A.D., Teixeira F., Pinto F.**Hospital de Santa Maria / Faculdade de Medicina de Lisboa, Lisboa, Portugal***Purpose:** To determine the applicability of the inferior, superior, nasal and temporal neuroretinal rim area characteristic configuration (ISNT rule) in adult normal Portuguese population based on spectral optical coherence tomographic (SD-OCT) parameters.**Method:** Prospective study that included 188 eyes of 94 patients that underwent routine SD-OCT (Spectralis, Heidelberg Engineering, Heidelberg, Germany) in our service with the new glaucoma module premium edition. Patients with confirmed or suspected glaucoma, visual field defects, other optic disk or retinal abnormalities were excluded. Optic Nerve Head (ONH) parameters such as Minimum Rim Width (MRW), Bruch's Membrane Opening (BMO) and thickness of peripapillary nerve fibre layer (RFNL) on four quadrants were analyzed.**Results:** The mean age group was 55 ± 10.8 (range 19-83 years), 56% female, 83% caucasian and 17% melanodermic. Mean spherical equivalent was 0.10 (min -6.5, max +5), and mean best-corrected visual acuity was 20/20 (min 20/40, max 20/16). NRR thickness area (MRW) was 376.0µm ± 75.9, 345.4µm ± 81.8, 365.1µm ± 86.8, 240.5µm ± 57.4, respectively on inferior, superior, nasal and temporal quadrants and ISNT rule was present only in 23%. However, when excluding nasal quadrant (inferior>superior>temporal (IST) or inferior>superior (IS)) such configuration was present in 71% and 73% of patients, respectively. Mean age and mean optic disk/scleral area was higher in those with ISNT rule present (58.8 vs 53.7 years and 2.08 mm² ± 0.4 vs 1.98 mm² ± 0.5, respectively) but was not significant (p>0.05) as sex and race differences (p>0.05).**Conclusion:** Presence of ISNT rule in normal population is not confirmed by Heidelberg SD-OCT assessed with ONH parameters and it is only present in 23% of eyes. The authors propose that a "IS/IST rule" seems more representative in a normal population as exclusion of nasal quadrant consideration increases prevalence. No relation with sex, age, race or optic disk area was found.

LATE BREAKERS

LB04: Glaucoma, Paediatric Ophthalmology & Strabismus

LB-PED-732

Rethinking botox treatment as first line of treatment in strabismus patient*El Mansoury J.^{1,2}*¹King Abdulaziz University Faisal Specialist and Research Center Hospital, Ophthalmology, Riyadh, Saudi Arabia, ²Wills Eye Hospital, Philadelphia, United States

Purpose: The use of botulinum toxin A (BTXA) in childhood strabismus is still a matter of debate. This study investigates the indications for and outcome of BTXA therapy in children at King Faisal specialty and research center, Riyadh Saudi Arabia.

Methods: Retrospective review of 144 children treated with BTXA for strabismus as primary line of treatment. Factors considered were age, number of injection and outcome of injections. results. The beneficial effects of a single injection were modest, and a second injection was often necessary to achieve satisfactory ocular alignment. 28(54.90) among the patients received one injection, 15(29.41) received two Botox injections and 8(15.69) received three Botox injection. 83 patients required additional treatment among them 51 needed surgery whereas 32(7.79) were corrected with proper refraction. The remaining 57 patients refused any further intervention Four patients were lost the follow up.

Method: The injection of a pre-calculated dose varying between 2.5 and 7 units was done through intact conjunctiva with a 27 gauge needle on an insulin needle without the use of an EMG electrode. One drop of phenylephrine 2.5 % was used before the injection to minimize the risk of bleeding. Antibiotic eye drops was instilled at the end of the procedure.

Results and Conclusion: Botulin toxin is a safe and valuable method of treating various forms of strabismus. Patients have to be selected very carefully and there must be a valid reason why Botox is needed as a first line of treatment. It is a good alternative to patients with small angle of deviation where incisional surgery was declined or considered not the best alternative. Which way is better for the long run the question whether the medial rectus insertion should remain in its physiologic position. the question at this moment is not answered. In the long-term management of strabismus, surgery remains the most frequently used intervention worldwide.

LB-PED-733

Role of hepatocyte growth factor (HGF) gene variants in hyperopia and ocular biometric parameters in children*Barrio-Barrio J.¹, Bonet E.¹, Galdós M.², Susana N.³, Pueyo V.⁴, Recalde S.¹, Patiño-García A.⁵*¹Clinica Universidad de Navarra, Ophthalmology, Pamplona, Spain, ²Hospital Cruces, Ophthalmology, Bilbao, Spain, ³Hospital Universitario la Paz, Ophthalmology, Madrid, Spain, ⁴Aragon Institute for Health Research (IIS Aragón), Ophthalmology, Zaragoza, Spain, ⁵Clinica Universidad de Navarra, Department of Pediatrics and Clinical Genetics Unit, Pamplona, Spain

Purpose: An association between specific Hepatocyte Growth Factor (HGF) gene variants and hyperopia has been reported. We wished to assess this association in an independent multicenter pediatric Spanish cohort and evaluate its association with ocular biometric parameters.

Methods: We performed a prospective multicenter study including 215 emmetropic controls (Spherical Equivalent (SE): > -0.50 D $< +1.25$ D, age: 21.10 ± 3.16 years), and 188 hyperopic children (SE: $\geq +3.50$ D, age: 8.23 ± 2.62 years) recruited at four Spanish centers. Each individual underwent a comprehensive eye examination including cycloplegic refraction, topographic and biometric analysis. We genotyped HGF single nucleotide polymorphisms (SNPs) rs12536657 and rs5745718 on genomic DNA from oral swabs. We performed logistic regression and quantitative trait association using generalized estimating equation models adjusted by gender and age.

Results: A total of 403 unrelated subjects (194 males, 209 females; mean age, 15.06 ± 7.06 years) were included in the analysis. No association between rs12536657 or rs5745718 and hyperopia was found using genotypic, allelic and haplotypic tests. We found significant associations between mean corneal curvature and rs12536657 (OR, 2.14; 95% CI, 1.13-4.06; $p=0.02$) and rs5745718 (OR, 2.42; 95%CI, 1.23-4.74; $p=0.01$) under an additive genetic model. Similar associations were observed for flat and steep corneal meridians. No association was found between HGF SNPs and other topographic or biometric measurements.

Conclusions: Our results support a role for HGF gene variants rs12536657 and rs5745718 in corneal curvature. However, we found no association between these SNPs and hyperopia in the Spanish population.

LB-PED-734

Evaluation of the ophthalmological findings in childhood attention deficit disorder with hyperactivity*Sari A.¹, Ozkan G.², Turkegun M.³, Toros F.⁴, Oktay O.²*¹Mersin University Medical School, Mersin, Turkey, ²Mersin University Medical School, Dept. Of Ophthalmology, Mersin, Turkey, ³Mersin University Medical School, Dept. Of Biostatistics, Mersin, Turkey, ⁴Mersin University Medical School, Dept. Of Child And Adolescent Psychiatry, Mersin, Turkey

Purpose: To investigate the possible correlation of attention deficit and hyperactivity disorder (ADHD) and ocular problems, we studied the refractive errors, near point of convergence and strabismus with ADHD and normal age-matched children.

Method: We enrolled 58 healthy and 58 recently diagnosed ADHD children between the ages 4-16 years. Both groups were separated into 2 agegroups consisting of 4-9 years and 10-16 years old. All children were evaluated for complete ophthalmological examination including visual acuity, refractive error, near point of convergence (NPC) and strabismus.

Results: In our study the difference for NPC between ADHD and control groups was slightly significant only for 10-16 years old group. The average near point convergence, refractive errors, anisometropia, amblyopia, strabismus were found to be similar to the incidence in the general population.

Conclusion: Both children with ADHD and convergence/accommodation anomalies usually have diminished ability to focus while reading or listening to lectures at school. Not infrequently these two diagnosis are misdiagnosed as the other. In this study the results suggest a weak relationship between NPC and ADHD. Moreover to define the relationship of near point of convergence with this disorder, a multicentric study including more patients is necessary.

LB-PED-735

The usefulness of assessing the thickness of retinal ganglion cell complex in optic neuritis in children

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Aim: We investigated the ganglion cell complex (GCC) thickness in children with optic neuritis (ON) and in control group and its relationship with visual function.

Patients and methods: We retrospectively analyzed 66 eyes: 33 eyes of 28 patients with first uni or bilateral ON (study group), and 33 healthy eyes of 25 children (control group). The mean age of patients in both groups was 13.8 years. We evaluated patient's best corrected visual acuity for distance (CDVA) and visual acuity for near vision (CNVA) at admission and discharge, visual field (VF) mean deviation (MD), the result of VEP pattern and mean and minimum GCC thickness. Patients with significant refraction error were excluded from both groups.

Results: The mean and minimum GCC thickness in the study group was respectively 82.0 µm and 79.0 µm, in the control group 84.5 µm and 80.5 µm. In first group mean BCVA at admission was 0.3, CNVA D 0.8 and at discharge 0.6 and D 0.6. In control group mean BCVA and CNVA were 1.0 and D 0.5 both at admission and discharge. The average VF MD was 9.7 dB in study group and 3.0dB in control group. In study group in 9 cases ON was confirmed by VEP, in 19 result was inconclusive and in 3 correct. We found no statistically significant difference between measurements of mean and minimum GCC thickness between groups. However, there was a strong positive correlation between the average and the minimum GCC thickness in study group. Only the difference in VF MD proved to be a statistically significant between study and control group.

Conclusion: Assessment of the mean and minimum GCC thickness may be useful examination in the diagnosis and prognosis of visual function in children with ON in future. Therefore, at the moment accurate clinical evaluation and traditional diagnostic methods seem to be the most useful diagnostic and prognostic tools in ON.

LB-PED-736

Corneal endothelium in pediatric patients with uveitis: a longitudinal study

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Purpose: To study the longitudinal effect of anterior chamber inflammation on the corneal endothelium in children.

Method: Children with diagnoses of anterior chamber inflammation (anterior, intermediate, or pan-uveitis) and those at risk of developing uveitis due to juvenile idiopathic arthritis were recruited to undergo repeated specular microscopy assessments (SM). Demographic and clinical data were prospectively collected. Main outcome measure was changes in central corneal endothelial cell density (ECD) determined by specular microscopy (SM). Correlations with clinical course were also determined.

Results: 141 children were recruited, with 101 had follow-up SM. Mean age was 10.1±4.2years. Mean follow-up was 12.4±3.5months. Mean total duration of activity was 24.9±33.6weeks prior to first SM, and 5.9±9.8weeks between the first and second SM. Regarding mean ECD at first SM (ECD1) and mean ECD at second SM (ECD2), intra-group comparison in eyes with no ocular surgery (n=106) and those with (n=35) were not significantly different (P=0.07 and P=0.10, respectively).

However, significant differences were found between the two groups in mean ECD1 (P<0.001) and mean ECD2 (P<0.01). In 12 patients with unilateral uveitis and no ocular surgery in either eye, mean ECD1 between eyes was significantly different (P=0.04) but mean ECD2 was not (P=0.06).

Correlations with ECD2 were found with age at final SM (-0.57, P<0.001), duration of disease diagnosis (-0.34; p<0.001), and number of surgeries through the entire period (-0.33, P<0.001) and between SM assessments (-0.23, P=0.02).

Conclusion: Longer duration of being diagnosed with uveitis and surgical treatment of its complications adversely affected the corneal endothelium. The lack of change over the follow-up period suggests that by optimising anterior chamber inflammation control, endothelial cell loss could be minimised.

LB-PED-737

Pediatric vision screening in the primary care setting

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Purpose: Early intervention is critical to prevent treatable causes of vision loss in children. The objectives of the current study are: (1) to assess how well primary care physicians in Ontario follow the vision screening guidelines for children as recommended by the Canadian Pediatric Society (CPS) and the Rourke Baby Record; and (2) to identify barriers to vision screening in the primary care setting.

Method: A 19-question survey was mailed out to 1,000 randomly selected family physicians (family MDs), 1,000 general practitioners (GPs), and 1,000 pediatricians in Ontario as listed in the 2013 Canadian Medical Directory.

Results: A total of 719 completed surveys were included in the analysis (449 from family MDs GPs and 270 from pediatricians). Vision screening was reported to be performed by 65% of family MDs/GPs and 52% of general pediatricians at every well child visit. While red reflex was reported to be checked by 94% of all physicians in children under 3, it was only performed by 25% of respondents for children over 3. 37% of all physicians reported never performing a visual acuity test in any age group.

When asked about the obstacles preventing them from performing vision screening, lack of training (family MDs/GPs: 50%, pediatricians: 42%), time constraints (family MDs/GPs: 42%; pediatricians: 40%), and inadequate reimbursement (family MDs/GPs: 17%; pediatricians: 15%) were the most commonly cited reasons.

Conclusion: Strategies to improve vision screening are necessary given that early intervention is crucial to prevent treatable causes of vision loss in children.

LB-GLA-738

Morphometric parameters of a lens according to optical biometry data

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Purpose: We know that lens growth is continuous throughout life. Since the other structures in the eye has nearly permanent size, increased lens can impede the normal circulation of intraocular fluid that may result in the development of angle-closure glaucoma. Our purpose was to identify the connections between lens thickness and age.

Method: We carried out a biometry of 800 eyes using the device Lenstar LS 900, which use optical low coherence reflectometry (OLCR) and provide axial measurements of the entire eye — from the cornea to the retina — with laser precision and possible error about $\pm 2 \mu\text{m}$.

Results: All patients were divided into 16 groups according to age with a range of 5 years. As a result, the average value of the thickness of the lens in 11-16 years was $3,43 \pm 0,08 \text{ mm}$, gradually increasing to 37-41 years, which amounted to $4,01 \pm 0,22 \text{ mm}$.

In the group where the age of the patients was 57-61 years, the thickness of the lens was $4,40 \pm 0,46 \text{ mm}$ and the maximum value reached $5,00 \pm 0,28 \text{ mm}$ in the oldest patients, who were 87-91 years old. This data represent the evident correlation between age and lens thickness - its size increases with age.

Conclusion: 1. Lens thickness and other morphometric parameters of eyeball can help to provide differential diagnostics of glaucoma and predict its development.

2. Morphometric data, including lens thickness, helps us not only choose the correct IOL in the cataract and refractive surgery and also evaluate biometrics changes in eyes with refraction anomalies.

LB-GLA-739

Bilateral acute angle closure glaucoma following treatment with topiramate

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Purpose: To relate a case report of a rare but serious adverse effect following the use of topiramate for a migraine condition. Topiramate is a sulfamate-substituted monosaccharide used mainly as an antiepileptic drug and is also effective in migraine prophylaxis. The ocular side effects include acute onset angle closure glaucoma, acute myopia, suprachoroidal effusion, periorbital edema, scleritis and diplopia.

Methods: A 30 year old female reported with severe migraine and was started on topiramate 75 mg/day 8 days ago. She presented at the emergency room with sudden blurring of vision. She was subjected to ophthalmic examination and multimodal imaging evaluation.

Results: She presented a best corrected visual acuity of 0,05 in the right eye and 0,4 in the left eye. The intraocular pressure was 40 and 42 mmHg (goldmann aplanation). The autorefractometer showed a bilateral myopia -4.50D and -5D. The anterior segment was hyperemic, with a narrow anterior chamber (van herick 1), the gonioscopic exam reveal a closed-angle (Shaffer 0) confirmed with a Pentacam®. In the funduscopy examination there were folds in the internal limiting membrane characterized by the spectral domain optical coherence tomography. Under ocular maximum hypotensive medication, cycloplegic and suspension of topiramate there was a reversion of the condition.

Conclusion: By inducing a ciliochoroidal effusion, a zonular relaxation and anterior displacement of the iris and crystalline lens, the topiramate can explain the ocular manifestations observed in this patient. Since the ocular adverse effects of this drug are idiosyncratic, its severity can not be underestimated and its recognition is particularly important not only by ophthalmologists but also by neurologists and psychiatrists.

LB-GLA-740

Investigation of relationship of iris color with retinal nerve fiber layer, macula and choroid thickness in healthy individuals

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Purpose: To determine whether there was a significant relationship between eye (Iris) color with axial length, intraocular pressure, retinal nerve fiber layer thickness (RNFL), macular thickness and choroidal thickness

Method: A prospective cross-sectional study involving 92 eyes of 92 healthy volunteers. These were divided into dark colored-eye (DCE) and light-colored eye (LCE) groups according to iris color. The RNFL and macular thicknesses were analysed with standard OCT protocol while choroidal thickness was analysed with EDI protocol in all subjects. Choroidal thickness was measured at the fovea, 1500 μm nasal and 1500 μm temporal to the fovea in a horizontal section.

Results: Of the 92 eyes included, 62 (67.4%) were dark-colored while 30 (32.6%) were light-colored. The mean age was 29.22 ± 5.86 years in the subjects with DCE and 28.86 ± 6.50 years in those with LCE. No significant difference was detected in mean age, axial length, macular thickness, choroidal thickness and IOP between the groups ($p > 0.05$).

However RNFL thicknesses varied depending on the quadrant measured, and were lower in both global and the nasal and temporal quadrants for individuals with LCE ($p \leq 0.022$).

Conclusion: No significant differences were found in IOP, macular thickness and choroid thickness between individuals with DCE and LCE. The RNFL thickness was found to be lower in the nasal and temporal quadrants for LCE, which may imply an increased risk of glaucoma. Larger, more diverse studies with longer follow-up times are needed to gain further understanding in terms of glaucoma risk.

LB-GLA-741

In vivo ultrahigh-resolution imaging of aqueous outflow structures in healthy subjects and glaucoma patients after canal expander implantation

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Purpose: To assess whether ultrahigh-resolution OCT (UHR-OCT) prototype can visualize the microstructure of the Schlemm's canal (SC), providing a better insight into the aqueous outflow system (AOS).

Method: SC cross-sectional area was measured using the UHR-SDOCT, providing a theoretical axial resolution of 1.2 μm in tissue, in 10 healthy volunteers during 2 conditions: before and after topical instillation of 2% Pilocarpine. To validate the precise anatomical location of SC, 2 POAG patients were included, who underwent canaloplasty procedure combined with implantation of Stegmann Canal Expander (SCE) into SC.

Results: 10 healthy volunteers (5 female, 5 male) with an average age of 32.1 ± 11.0 years (range 21 - 53 years) were included in the study.

Following instillation of one drop pilocarpine, mean IOP in the study eye decreased from 13.3 ± 2.9 mmHg to 11.5 ± 3.1 mmHg ($p = 0.03$).

The mean SCLA of all subjects at baseline was 3620 ± 589 μm^2 nasally and 4075 ± 335 μm^2 temporally.

After administration of pilocarpine, SCLA increased to 7772 ± 994 μm^2 ($p = 0.002$ versus baseline) on the nasal and to 7760 ± 857 μm^2 on the temporal side ($p = 0.002$ versus baseline), respectively. No correlation was found between change in IOP and change in SCLA after instillation of pilocarpine (nasal: $r = -0.092$, $p = 0.86$; temporal: $r = 0.084$, $p = 0.88$)

Conclusion: In comparison with conventional OCT systems, UHR-OCT of corneo-scleral limbus provides non-invasive *in-vivo* high-resolution optical biopsy of AOS microstructure, close to the visibility in histologic sections and could be considered as a valuable tool in glaucoma management, including clinical decision making and follow-up. It is a promising technique for the use in clinical practice in assessment of the SC and its regional alterations caused by pathologic conditions and may enable better selection of patients with predicting and optimizing the outcomes of pharmacological, laser or surgical treatment targeting outflow structures.

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The abbreviations after the authors' names refer to Free Paper (FP), Rapid Fire (RF), Talking Poster (TP), Late Breaker (LB) and/or Electronic Poster (EP); an abbreviation of their topic; and the presentation number.

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- Rodrigues S. EP-NEO-384,
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- Rodrigues W. FP-COR-063,
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- Rodrigues de Almeida C.M.C. EP-OPL-439*
- Rodriguez B. EP-RET-550
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- Romero D. EP-CAT-198
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- Rosas V. EP-COR-231,
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- Rupenthal I.D. RF-OCS-110*
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- Sa Cardoso M. RF-GLA-163
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- Sabrane I. RF-COR-146,
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- Safranek F. EP-NEO-382*
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Saldan Y.	LB-GLA-738, LB-GLA-738*	Sawires Y.	EP-ONC-469	Shinoda K.	EP-RET-599
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Salvanou E.A.	LB-RET-719	Scarale G.P.	FP-GLA-075	Shouji T.	EP-GLA-338, EP-RET-599
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Santos D.	EP-UVE-682	Segurado J.	EP-GLA-334	Simoës P.	EP-RET-660, EP-UVE-696
Santos M.J.	EP-OPL-444	Seidler B.	FP-RET-100	Simões P.	EP-ONC-475*, EP-RET-662
Sapeta S.	LB-GLA-741*	Seifi A.	EP-PED-502	Simonov A.	EP-CAT-198
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		Shahin M.	EP-RET-551	Slawek J.	EP-NEO-388
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		Sharma P.	FP-NEO-049		
		Shchadnykh M.	EP-RET-659*		
		Sheikh Abdul Kadir S.H.	EP-GLA-325		
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- Smiljkovic Radovanovic K. EP-GLA-311,
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- Smith P. FP-RET-094
- Smith R. EP-CAT-190
- Smoliński Ł. EP-NEO-402
- Soares A. EP-OPL-443*,
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- Soares G.A. EP-RET-604
- Soares V. EP-OPL-439
- Sobeih D. FP-EDU-010*,
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- Sobhani D. FP-GLA-078
- Sobolev N. FP-REF-023
- Sokolowska E. EP-CAT-204
- Solarski K. EP-RET-668
- Solé González L. EP-RET-629
- Soler M. FP-PED-035
- Solonina S. FP-ONC-011*
- Somner J. FP-PED-039*
- Song M. EP-GLA-314
- Soni A. EP-RET-558*,
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- Sonoda D. EP-RET-604
- Sood S. EP-REF-540
- Soos J. EP-RET-650
- Sorochynska T. RF-ONC-119
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- Souied E. FP-RET-003
- Sousa D. RF-GLA-162
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- Sousa Neves F. RF-PED-126*,
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- Sousa Pina B. EP-NEO-401*
- Söylev Bajin M. FP-NEO-047
- Spathi E. EP-EDU-288
- Sperga V. LB-GLA-742
- Spicka I. EP-UVE-679
- Sramka M. EP-ONC-476,
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- Sreckovic S. EP-CAT-203
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- Srour M. FP-RET-003
- Stamoulas C. EP-NEO-404
- Stanila A. EP-OCS-421
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- Stanishevskaya O. EP-RET-560*
- Stankovic-Babic G. EP-GLA-311,
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- Stepanov A. EP-RET-574*
- Steponaviciute R. FP-RET-096
- Stone J.H. EP-NEO-383
- Stoyanova N. EP-EXT-301*,
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- Streleckiene G. EP-RET-562,
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- Sun X. EP-GLA-314
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- Suzani M. EP-RET-677
- Suzuki N. FP-EPH-041*
- Svariniece E. LB-OCS-728
- Sveikatiene J. EP-EDU-285
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- Szabó D. FP-RET-093
- Szaflik J. RF-RET-138,
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- Szala E. EP-PED-495
- Szalai I. EP-EXT-305*
- Szepessy Z. TP03-UVE-184*
- Szigeti A. EP-RET-674*
- Sziklai P. EP-OCS-428
- Szőőr Á. EP-COR-232
- Tachfouti S. RF-COR-146,
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- Taechajongjintana M. TP02-COL-180*
- Takahashi H. EP-COR-228,
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- Takemura J. EP-PED-484
- Tam K. RF-GLA-157
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- Tandil A. EP-NEO-376,
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- Tandogan T. EP-EDU-275
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- Tang H.H.Y. FP-RET-008*
- Tanihara Y. EP-PED-484
- Tanrıaşıklı G. EP-COR-233
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- Tashbayev B. FP-OCS-081*
- Tatrai E. EP-RET-675*
- Tau J. EP-OCS-430
- Tauber J. FP-COR-064
- Taubner J. EP-NEO-382
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- Tehrani N. LB-PED-736
- Teister J. FP-GLA-079
- Teixeira F. FP-COR-063*,
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- Temessek A. EP-RET-624
- Tenedório P. TP02-EXT-178,
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- Teoh S.C.B. RF-UVE-121
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- Terzic S. EP-EDU-282,
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- Tesone A. EP-OCS-430
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- Thomas P. FP-PED-039
- Tibilov A. FP-ONC-011
- Tidbury L. EP-PED-483*
- Timova J. EP-CAT-216
- Todorovic M. EP-RET-203*
- Toju A. EP-COR-228*
- Toledo A. EP-RET-627
- Toledo Mota R. FP-NEO-048
- Tomoyori E. EP-RET-575
- Tonuzi A. EP-PED-513
- Topouzis F. EP-EDU-288,
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- Toros F. LB-PED-734
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- Toscano A. FP-PED-034,
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- Toyokawa N. EP-GLA-333*
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- Trancoso Vaz F. EP-GLA-367
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- Trejja A. LB-GLA-742
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- Tripathy M. FP-NEO-049
- Trojanowski M. FP-ONC-013
- Tronina S. EP-OPL-453
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 Yılmaz I. EP-PED-517
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- Yip C.C. EP-OPL-449
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- Zavala A. EP-ONC-469
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 EP-NEO-404
 Zianlitcev S. EP-CAT-211
 Ziko O. EP-RET-640
 Zina S. EP-GLA-368,
 EP-UVE-681
 Ziola S. EP-GLA-335
 Zivkovic M. EP-GLA-311,
 EP-RET-636,
 EP-UVE-699
 Živković M. EP-GLA-320
 Zlatanovic G. EP-RET-636
 Zlatanovic M. EP-RET-636
 Zlatarova Z. EP-OPL-454*,
 EP-ONC-463*
 Zou B. EP-CAT-190
 Zubov D. EP-GLA-356
 Zugar R. EP-REF-533
 Zulfiyev G. EP-ONC-467
 Zvirblyte R. EP-RET-632